

## **WO2006036868**

Publication Title:

PORTABLE STORAGE CONTAINER

Abstract:

Abstract of WO2006036868

A portable storage container that both stacks and nests with similar containers includes a plurality of walls extending upwardly from a floor. At least one bail member is moveable between a plurality of positions for supporting the similar containers at varying heights. The bail member includes at least one rib extending radially outward. A similar container stacked on the bail members of the container will interlock with the at least one rib, thereby preventing lateral movement of the upper container relative to the lower container.

Data supplied from the esp@cenet database - Worldwide d59

-----  
Courtesy of <http://v3.espacenet.com>

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 April 2006 (06.04.2006)

PCT

(10) International Publication Number  
**WO 2006/036868 A1**

(51) International Patent Classification:

B65D 21/06 (2006.01) B65D 21/04 (2006.01)

(21) International Application Number:

PCT/US2005/034355

(22) International Filing Date:

23 September 2005 (23.09.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

10/949,592 24 September 2004 (24.09.2004) US

(71) Applicant (for all designated States except US): **REHRIG PACIFIC COMPANY** [US/US]; 4010 East 26th Street, Los Angeles, CA 90023 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HASELL, Jon, P.** [US/US]; 968 St. Charles Avenue, #104, Atlanta, GA 30306 (US). **SMYERS, Justin, M.** [US/US]; 533 Pismo St. #8, San Luis Obispo, CA 93401 (US). **APPS, William, P.** [US/US]; 225 Lake Heights Drive, Alpharetta, GA 30022 (US).

(74) Agent: **DIAMOND, Konstantine, J.**; Rehrig Pacific Company, 4010 East 26th Street, Los Angeles, CA 90023 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

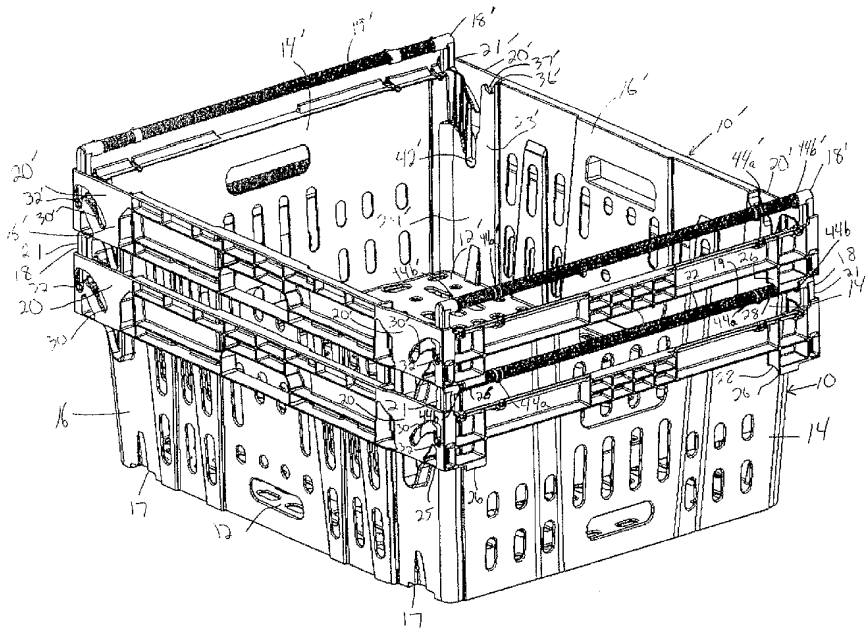
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: PORTABLE STORAGE CONTAINER



(57) Abstract: A portable storage container that both stacks and nests with similar containers includes a plurality of walls extending upwardly from a floor. At least one bail member is moveable between a plurality of positions for supporting the similar containers at varying heights. The bail member includes at least one rib extending radially outward. A similar container stacked on the bail members of the container will interlock with the at least one rib, thereby preventing lateral movement of the upper container relative to the lower container.

WO 2006/036868 A1



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## PORTABLE STORAGE CONTAINER

### BACKGROUND OF THE INVENTION

The present invention relates generally to portable storage containers and  
5 more particularly to portable storage containers that provide the ability to select different nesting and stacking depths.

Portable storage containers that both stack and nest with similar containers  
are commonly used for transporting and storing goods. Nesting is typically achieved  
when an empty container receives a like container therein such that there is at least  
10 some overlap between the walls of the containers. The stacking feature is typically  
used when an occupied container has a like container supported thereon, such that  
the goods contained in the lower container are preferably not contacted or damaged  
by the upper container. Many containers use members (known as bail members) to  
achieve the stacking feature. Bail members may typically be positioned out of the  
15 way for purposes of nesting, but then moved to a stacking position for allowing  
containers to be stacked thereon.

The bail members in some containers are movable among three positions: a  
nesting position, a first stack position and a second stack position. In the nesting  
position, the bail members are out of the way and the upper container can  
20 substantially nest within the lower container. The bail members support containers  
in the first stack position at a first distance from the floor, where the upper container  
is not substantially nested within the lower container. The bail members also can be  
moved to the second stack position to support the upper container at a second  
distance from the floor, where the upper container is partially nested within the  
25 lower container.

### SUMMARY OF THE INVENTION

A portable storage container that both stacks and nests with similar  
containers includes a plurality of walls extending upwardly from a floor. At least  
30 one bail member is moveable between a plurality of positions for supporting the  
similar containers at varying heights. The bail member includes a support portion  
pivotably connected to the container by arms at each end. The bail member includes

at least one rib extending radially outward from the support portion. A similar container stacked on the bail members of the container will interlock with the at least one rib, thereby preventing lateral movement of the upper container relative to the lower container.

5           The bail member further includes a plurality of microribs on substantially the entire surface of the support portion. This prevents loose stickers, washed from the container, from sticking to the bail members.

### BRIEF DESCRIPTION OF THE DRAWINGS

10           Other advantages of the present invention can be understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

          Figure 1 is a perspective view of a container according to a first embodiment of the present invention with the bail members in a high nest position and with a  
15           similar container nested therein.

          Figure 2 shows a sectional view of the lower container of Figure 1, with the bail members in the high nest position.

          Figure 2a is an enlarged view of the area 2a of Figure 2.

          Figure 3 is a side view of the containers of Figure 1.

20           Figure 4 is a sectional view taken through the bail members of the containers of Figure 1.

          Figure 5 is a sectional view of the lower container of Figure 1 with the bail members in a low nest position.

25           Figure 6 is a sectional view of the lower container of Figure 1 with the bail members in a low stack position.

          Figure 7 is a perspective view of the containers of Figure 1 with the bail members of the lower container in the low stack position.

          Figure 8 is a side view of the containers of Figure 7.

30           Figure 9 is a sectional view, taken through the bail member of the lower container, of the containers of Figure 7.

          Figure 10 is a sectional view of the lower container of Figure 1 with the bail members in a high stack position.

Figure 11 is a perspective view of the containers of Figure 1 with the bail members of the lower container in the high stack position.

Figure 12 is side view of the containers of Figure 11.

Figure 13 is a sectional view, taken through the bail member of the lower  
5 container, of the containers of Figure 11.

Figure 14 is a perspective view of a container according to a second embodiment of the present invention having bail members in a high stack position and a similar container stacked thereon.

Figure 15 shows a sectional view of the lower container of Figure 14, with  
10 the bail members in the high stack position.

Figure 16 is a side view of the containers of Figure 14.

Figure 17 is a sectional view taken through the bail member of the lower container of Figure 16.

Figure 18 is a sectional view of the lower container of Figure 14 with the bail  
15 members in a low stack position.

Figure 19 is a side view of the containers of Figure 14 with the bail members of the lower container in the low stack position.

Figure 20 is a sectional view taken through the bail member of the lower container of Figure 19.

Figure 21 is a sectional view of the lower container of Figure 14 with the bail  
20 members in a low nest position.

Figure 22 is a side view of the container of Figure 21.

Figure 23 is a perspective view of the container of Figures 4-22 stacked on the container of Figures 1-13, with the bail members of the lower container in the  
25 high nest position.

Figure 24 is a side view of the containers of Figure 23.

Figure 25 is a sectional view of the containers of Figure 24 taken through a bail member of the lower container.

Figure 26 is a perspective view of the containers of Figure 23, with the bail  
30 members of the lower container in the high stack position.

Figure 27 is a side view of the containers of Figure 26.

Figure 28 is a sectional view of the containers of Figure 27 taken through a bail member of the lower container.

Figure 29 is a perspective view of the containers of Figure 23, with the bail members of the lower container in the low stack position.

5        Figure 30 is a side view of the containers of Figure 29.

Figure 31 is a sectional view of the containers of Figure 30 taken through a bail member of the lower container.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

10        Two like containers 10, 10' according to the present invention are shown stacked in Figure 1. Generally, the description will be with reference to the lower container 10, although in the example shown in Figure 1, the description would be equally applicable to the upper container 10'. The container 10 includes a floor 12 and a pair of opposed side walls 14 and a pair of opposed end walls 16. A pair of  
15        notches 17 are formed at the bottom of the end walls 16 and the floor 12. The notches 17 each define a channel which extends one end wall 16 to the other.

Two bail members 18 are each mounted to each end wall 16. While they may take a variety of shapes, bail members 18 are shown as molded plastic having a generally cylindrical support portion 19 that extends across the length of the  
20        container 10. Each bail member 18 includes a pair of arms 21 extending transversely from the support portion 19. As shown in Figure 2, each arm 21 includes an inward, lateral projection 38 that provides additional weight to the bail member 18, increases stiffness and resistance to twisting and increases stability.

Each bail member 18 includes a plurality of circumferential molded micro-  
25        ribs 22 on the support portion 19 providing alternating recesses and protrusions all along substantially the entire surface of the support portion 19. The microribs 22 are substantially smaller than the diameter of the support portion 19 of the bail member 18, e.g. less than five percent. The microribs 22 are also tightly spaced axially along the support portion 19, such that the spaces between the microribs 22 are not wider  
30        than the microribs 22 themselves. In the example shown, the width of the spaces between the microribs 22 is approximately equal to the width of the microribs 22. The microribs 22 help prevent stickers, washed from the container 10, from sticking

to the bail members 18 when washing the container 10 by reducing the available surface area of the support portion 19.

5 The end walls 16 each include an upper wall portion that has an outer wall portion 20 spaced from an inner wall portion 23. A lower wall portion 24 is generally aligned below the inner wall portion 23, such that the outer wall portion 20 forms a support or ledge 25 along the end wall 16. The side walls 14 similarly include ledges 26 protruding outwardly from the side walls 14 at a height even with the ledges 25 on the end walls 16. The ledges 26 on the side walls 14 include lower concave recesses 28 formed along their length.

10 The inner wall portion 23 includes an upper support rest 36 at a height above the floor 12 for supporting the bail member 18 at an upper stack position. Each upper support rest 36 includes an upwardly open concave recess 37, which is a notch formed in the inner wall portion 23. The inner wall portion 23 further includes a lower support rest 42, which is closer to the floor than the upper support rest 36, for supporting the bail member 18 at a lower stack position.

Elongated pin openings 30 are formed in each outer wall portion 20 to trap pins 32 at the outer ends of the bail members 18. The pins 32 are slidable and pivotable within the pin openings 30, such that the bail members 18 can be moved to a plurality of positions and orientations.

20 In Figures 1-4, the bail members 18 are in a high nest position. The pins 32 of the bail members 18 are slid to an outer end of the pin opening 30 and the bail members 18 are pivoted to an upright position, as shown. In the high nest position, the support portions 19 of the bail members 18 are spaced above uppermost edges of the side walls 14 and end walls 16.

25 The bail member 18 in the high nest position supports a similar container 10', such that the floor 12' of the upper container 10' is suspended at a distance above the floor 12 of the lower container 10. The floor 12' of the upper container 10' is not in contact with the support portion 19 of the bail member 18 of the lower container 10. In this position, the upper container 10' is supported by the support portions 19 of the bail members 18 of the lower container 10, with the support portions 19 received in the concave recesses 28' formed in the ledges 26' on the side

30



walls 14'. This position provides a small storage space between the floors 12, 12' of the containers.

The support portions 19 of the bail members 18 each include a pair of inner radially-protruding interlocking projections 44a and a pair of outer radially-protruding interlocking projections 44b. The inner and outer interlocking projections 44a-b extend partially about the circumference of the support portion 19 and are at least several times greater in size than the microribs 22, for example, the inner and outer interlocking projections 44a-b are approximately ten times greater in radial thickness than the microribs 22. In the example shown, as can be seen in Figure 2a, the inner and outer interlocking projections 44a-b (only outer interlocking projections 44b visible in Figure 2a) extend halfway around the circumference of the support portion 19, tapering into the support portions at the ends of the interlocking projections 44a-b. A portion of one of the microribs 22 is also shown in Figure 2a. Each microrib 22 is approximately .0075" in radial height and has a half-circle cross-section.

The inner and outer interlocking projections 44a-b are positioned such that they project upwardly from the support portion 19 only in certain rotational positions of the bail member 18. For example, in the high nest position as shown in Figures 1-4, it can be seen in Figures 2-4 that the inner and outer interlocking projections 44a-b do not extend upwardly from the upper surface of the support portion 19, but project outwardly of the container 10. However, as can be seen in Figure 3, the concave ledges 26' are positioned inwardly of the outer interlocking projections 44b and in contact with the outer interlocking projections 44b because they are concave and extend downwardly on the outer surface of the support portion 19 of the bail member 18 in the high nest position. The outer interlocking projections 44b thus prevent lateral movement of the upper container 10' relative to the lower container 10 in the high nest position.

Figure 5 is a sectional view of the lower container 10 of Figure 1 with the bail members in a low nest position. In this position, a similar container 10' (not shown in Figure 5) can fully nest in the lower container 10 to the point where the ledges 25', 26' rest on the end walls 16 and side walls 14, respectively, of the lower container 10.

Figure 6 is a sectional view of the lower container of Figure 1 with the bail members 18 in a low stack position on the lower support rests 42 on the inner wall portions 23. The lower support rests 42 are notches formed in the inner wall portion 23 to impede movement of the bail member 18 out of the selected position. The lateral projections 38 are also interlocked within a recess 52 between the inner and outer wall portions 23, 20 to increase stability of the bail member 18. Figures 7-9 show the containers of Figure 1 with the bail members 18 of the lower container 10 in the low stack position. The upper container 10' is supported above the floor 12 by the bail member 18 in the notch 17' of the upper container 10' to create a middle-sized storage area between the floors 12, 12' that is larger than that provided by the high and low nest positions, but smaller than that provided by the high stack position. The arms 21 of the bail members 18 are received between the inner wall portions 23 and outer wall portions 20. The inner and outer wall portions 23, 20 prevent contact with the arm 21 by users or by other containers or objects, which prevents the pin 32 from being knocked out of the pin opening 30 when the bail members 18 are in the lower stack position.

Referring to Figure 9, the floor 12' and bottom edges of end walls 16 rest on the bail members 18 between the outer interlocking projections 44b on the support portion 19 of the bail members 18. The inner interlocking projections 44a on the support portion 19 are received in small recesses 46' formed in the bottom of the floor 12'. The interlocking of the inner and outer interlocking projections 44a-b with the floor 12', end walls 16' and recesses 46' prevent lateral movement of the upper container 10' when stacked on the bail members 18 of the lower container 10 when the bail members 18 are in certain of the multiple positions. Alternatively, the interlocking members, i.e. the recesses 46' and the interlocking projections 44a-b could be switched, such that the recesses 46' are on the bail members 18 and the interlocking projections 44a-b are on the bottom of the floor 12.

Figure 10 is a sectional view of the lower container 10 of Figure 1 with the bail members 18 in a high stack position. Figures 11-13 show the containers 10, 10' of Figure 1 with the bail members 18 of the lower container 10 in the high stack position. The support portion 19 of the bail member 18 of the lower container 10 is received in the notches 17' of the upper container 10' such that the floor 12' of the

upper container 10' is supported by the bail members 18. This position provides the maximum storage capacity in the container 10 and transfers load to the bail members 18, thus keeping the weight of the upper container 10' off the contents of the lower container 10. As shown in Figure 13, the floor 12' and bottom edges of end walls 16 rest on the bail members 18 between the outer interlocking projections 44b on the support portion 19 of the bail members 18. The inner interlocking projections 44a on the support portion 19 are received in small recesses 46' formed in the bottom of the floor 12'. The interlocking of the inner and outer interlocking projections 44a-b with the floor 12', end walls 16' and recesses 46' prevent lateral movement of the upper container 10' when stacked on the bail members 18 of the lower container 10 when the bail members 18 are in this high stack position.

Two containers 110, 110' according to a second embodiment of the present invention is shown in Figures 14-22. Components corresponding to those in the first embodiment are given a similar reference numeral, preappended with the numeral "1." Corresponding components of the upper container 110' are designated with the prime notation. The container 110 includes side walls 114 and end walls 116 extending upwardly from a floor 112. End walls 116 include outer wall portions 120 and inner wall portions 123. Pin openings 130 are formed in the outer wall portions 123 and receive the pins 132 of the bail members 118. The side walls 114 include ledges 126 protruding outwardly from the side walls 114 at a height even with the ledges 125 on the end walls 116. The ledges 126 on the side walls 114 include concave lower recesses 128 formed along their length. The support portions 119 of the bail members 118 have a single pair of interlocking projections 144 spaced proximate outer ends of the support portion 119. Each bail member 118 includes a plurality of circumferential molded micro-ribs 122 on the support portion 119.

In Figures 14-17, the bail members 118, 118' are shown in the upper stack position with the support portions 119 of the bail members 118 supported on support rests 136. In this position, the floor 112' of a similar container 110' is supported in notches 117' on the bail members 118 at a maximum height above the floor 112, as shown in Figure 17. The floor 112' and bottom edges of end walls 116' rest on the bail members 18 between the outer interlocking projections 44b on the support

portion 119 of the bail members 118. The interlocking projections 144 on the support portion 119 are received in small recesses 146' formed in the bottom of the floor 112'. The interlocking of interlocking projections 144 with the floor 112', end walls 116' and recesses 146' prevent lateral movement of the upper container 110' when stacked on the bail members 118 of the lower container 110 when the bail members 118 are in this high stack position.

Referring to Figure 15, the arms 119 of the bail members 118 include a pair of lateral projections 138a-b that interlock within recesses and contours between the inner and outer wall portions 123, 120 in the various positions of the bail members 118 to increase stability of the bail members 118.

In Figures 18-20, the bail members 118 are shown in the low stack position with the support portions 119 of the bail members 118 supported on the support rests 142. In this position, the floor 112' of a similar container 110' is supported on the bail members 118 above the floor 112, and the upper container 110' partially nests within the container 110 without putting contacting the contents of the container 110. As shown in Figure 19, the floor 112' and bottom edges of end walls 116' rest on the bail members 118 between the interlocking projections 144 on the support portion 119 of the bail members 118. The interlocking of the interlocking projections 144 with the floor 112' and end walls 116' prevents lateral movement of the upper container 110' when stacked on the bail members 118 of the lower container 110 when the bail members 118 are in this low stack position.

Figure 21 is a sectional view of the lower container 110 of Figure 14, with the bail members 118 in the low nest position, with the support portion 119 of the bail members 118 vertically aligned outwardly of the floor 112. This permits the full nesting of the upper container 110' (not shown in Figure 21) to the point where the ledges 125', 126' rest on the end walls 116 and side walls 114, respectively, of the lower container 110. Figure 22 is a side view of the container 110.

In both embodiments, the walls and floor of the container 10, 110 are integrally molded as a single unitary structure from a plastic material such as polypropylene or may also be HDPE, or other suitable materials, via an injection molding or other suitable process. The bail members 18, 118 may be formed of any suitable material, but are preferably injection molded from 50% glass-filled nylon or

other composite material, but could also be steel. The container 10 of Figures 1-13 and the container 110 of Figures 14-22 are also designed to be stacked together as shown in Figures 23-31. In the embodiments shown, the container 10 is 24 inches by 20 inches, while the container 110 is 24 inches by 16 inches. Of course, other sizes would be within the scope of the present invention, but these sizes are used for purposes of illustration below.

In Figures 23-25, the bail member 18 of the lower container 10 is in the highest position, such that the support portion 19 of the bail member 18 is spaced above the uppermost edges of the side walls 14 and end walls 16. The support portion 19 is received within the recess 128 on the ledge 126 of the upper container 110 to support the container 110 partially nested within the container 10, thereby protecting the contents of the lower container 10 between floors 12, 112 while efficiently stacking the containers 10, 110. It should be noted that, in embodiments having the dimensions stated above, there will be approximately a 2-inch gap between the end walls 116 of the upper container 110 and the end walls 16 of the lower container 10. It can be seen in Figures 24 and 25 that the inner and outer interlocking projections 44a-b do not extend upwardly from the upper surface of the support portion 19 when rotated to the high nest position, but project outwardly of the container 10. It can also be seen that the inner interlocking projections 44a would interfere with the placement of the ledge 126 onto the support portion 19 if they did extend upwardly in this position. However, as can be seen in Figure 24, the concave ledges 126 are positioned inwardly of the inner interlocking projections 44a and in contact with the inner interlocking projections 44a because they are concave and extend downwardly on the outer surface of the support portion 19 of the bail member 18 in the high nest position. The inner interlocking projections 44a thus prevent lateral movement of the upper container 110 relative to the lower container 10 in the high nest position.

Figures 26-28 illustrate the container 110 stacked on the container 10 while the bail members 18 are in the upper stack position. As shown, the notch 117 of the upper container 110 aligns with the bail member 18 in the upper stack position. As shown in Figures 27-28, the floor 112 and bottom edges of end walls 116 rest on the bail members 18 between the inner interlocking projections 44a on the support portion 19 of the bail members 18. The interlocking of the inner interlocking

projections 44a with the floor 112 and end walls 116 prevent lateral movement of the upper container 110 when stacked on the bail members 18 of the lower container 10 when the bail members 18 are in certain of the multiple positions.

5        Figures 29-31 illustrate the container 110 stacked on the container 10 while the bail members 18 are in the low stack position. As shown, the notch 117 of the upper container 110 aligns with the bail member 18 in the low stack position. As shown in Figure 31, the floor 112 and bottom edges of end walls 116 rest on the bail members 18 between the inner interlocking projections 44a on the support portion 19 of the bail members 18. The interlocking of the inner interlocking projections 44a with the floor 112 and end walls 116 prevent lateral movement of the upper container 110 when stacked on the bail members 18 of the lower container 10 when the bail members 18 are in certain of the multiple positions, including the low nest position.

15        While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention. There are different designs of containers that would benefit from the present invention.

20

## CLAIMS

1. A container capable of supporting a second container in a plurality of positions relative to the container, the container comprising:
  - 5 a floor;
  - an upstanding wall structure including a plurality of walls extending upwardly from the floor; and
  - a bail member having a support portion and an arm extending transversely from the support portion, the support portion including at least one radial projection
  - 10 between opposite axial ends of the support portion, the bail member selectively movable between a nest position and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor in the nest position, and the support portion is vertically aligned with the floor in the stacking position.
  - 15
2. The container of claim 1 wherein the at least one radial projection extends only partially around the support portion.
3. The container of claim 1 wherein the at least one radial projection includes a
- 20 first pair of axially-spaced radial projections.
4. The container of claim 3 wherein the at least one radial projection further includes a second pair of axially-spaced radial projections.
- 25 5. The container of claim 1 wherein the at least one radial projection is vertically aligned with an outer edge of the floor, such that the at least one radial projection would be adjacent a floor of a like container stacked thereon.
6. The container of claim 1 wherein the floor includes a bottom surface having
- 30 at least one recess for receiving the at least one radial projection of a like container stacked therebelow.

7. The container of claim 6 wherein the at least one recess includes two recesses and wherein the at least one radial projection includes two radial projections, each aligned with one of the two recesses such that each recess would receive therein the radial projection of a like container stacked therebelow.

5

8. A stack of containers wherein the container of claim 7 is a lower container and further including a smaller container stacked on the lower container, the smaller container having a floor and upstanding walls at the periphery of the floor, the floor having an outer dimension approximate the distance between the two radial  
10 projections, such that the smaller container is laterally constrained by the two radial projections relative to the lower container.

9. The container of claim 1 wherein the at least one radial projection includes an outer projection and an inner projection, the outer projection vertically aligned  
15 with an outer edge of the floor such that the at least one radial projection would be adjacent a floor of a like container stacked thereon, the inner projection spaced inwardly of the container from the outer projection, wherein the floor includes a bottom surface having at least one recess for receiving the inner projection of a like container stacked therebelow.

20

10. The container of claim 1 wherein the at least one radial projection extends only partially around the support portion, such that the at least one radial projection projects upwardly when the bail member is in a first position and such that the at least one radial projection does not project upwardly when the bail member is in a  
25 second position, different from the first position.

11. The container of claim 10 wherein the first position is one of the nest position and the stack position and wherein the second position is the other of the nest position and the stack position.

30



12. The container of claim 1 wherein the support portion of the bail member includes a plurality of alternating recesses and protrusions along substantially the entire outer surface of the support portion of the bail member.

5 13. The container of claim 12 wherein the alternating recesses and protrusions extend circumferentially about the support portion.

14. The container of claim 14 wherein the recesses have an axial width approximately equal to a width of the protrusions .

10

15. A container capable of supporting a second container in a plurality of positions relative to the container, the container comprising:

a floor;

15 an upstanding wall structure including a plurality of walls extending upwardly from the floor; and

a bail member having a support portion and an arm extending transversely from the support portion, the support portion including a plurality of alternating recesses and protrusions, the bail member selectively movable between a nest position and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor in the nest position, and the support portion is vertically aligned with the floor in the stacking position.

20

16. The container of claim 15 wherein the support portion of the bail member includes a plurality of microribs providing the alternating recesses and protrusions.

25

17. The container of claim 16 wherein outer surfaces of the plurality of microribs are approximately equal to space between the microribs.

18. The container of claim 15 wherein the alternating recesses and protrusions extend circumferentially about the support portion.

30

19. A container capable of supporting a second container in a plurality of positions relative to the container, the container comprising:

a floor;

an upstanding wall structure including a plurality of walls extending  
5 upwardly from the floor; and

a bail member having a support portion and an arm extending transversely from the support portion, the support portion including a plurality of alternating recesses and protrusions along substantially the entire outer surface of the support portion, the support portion including at least one radial projection between opposite  
10 axial ends of the support portion, the at least one radial projection at least several times greater in radial height than the alternating protrusions, the bail member selectively movable between a nest position and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor in the nest position, and the support portion is vertically aligned with the floor in the  
15 stacking position.

20. The container of claim 19 wherein the at least one radial projection extends only partially around the support portion.

20 21. The container of claim 19 wherein the at least one radial projection includes a first pair of axially-spaced radial projections.

22. The container of claim 21 wherein the at least one radial projection further includes a second pair of axially-spaced radial projections, each at least several  
25 times greater in height than the alternating projections.

23. A container capable of supporting a second container in a plurality of positions relative to the container, the container comprising:

a floor;

5 an upstanding wall structure including a plurality of walls extending upwardly from the floor; and

a bail member having a support portion and an arm extending transversely from the support portion, the arm pivotably mounted to one of the plurality of walls at a pivot point, the arm including a lateral projection between the pivot point and the support portion, the bail member selectively movable between a nest position  
10 and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor in the nest position, and the support portion is vertically aligned with the floor in the stacking position.

24. The container of claim 23 wherein the lateral projection increases an overall  
15 width of the arm.

25. The container of claim 23 wherein the lateral projection interlocks with a contoured surface on the upstanding wall structure of the container when the bail member is in a first position.  
20

26. A container capable of supporting a similar container in a plurality of positions relative to the container, the container comprising:

a floor having a bottom surface;

an upstanding wall structure including a plurality of walls extending  
5 upwardly from the floor;

a bail member having a support portion and an arm extending transversely from the support portion, the bail member selectively movable between a nest position and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor in the nest position, and the support  
10 portion is vertically aligned with the floor in the stacking position; and

at least one of the support portion and the floor including at least projection that interlocks with the other of the support portion and the floor of a similar container stacked therewith to prevent relative lateral movement.

27. A container capable of supporting a second container in a plurality of positions relative to the container, the container comprising:

a floor;

a pair of end walls proximate opposite peripheral edges of the floor; and

a bail member having an elongated support portion, the support portion  
20 including at least one interlocking member between opposite axial ends of the support portion, the bail member selectively movable between a nest position and a stacking position, wherein the support portion is vertically aligned outwardly of an outer periphery of the floor when the bail member is in the nest position, and the support portion is vertically aligned with the floor when the bail member is in the  
25 stacking position.

28. The container of claim 27 wherein the at least interlocking member includes at least one radial projection extends radially outwardly from the support portion.

29. The container of claim 28 wherein the at least one radial projection extends only partially around the support portion.

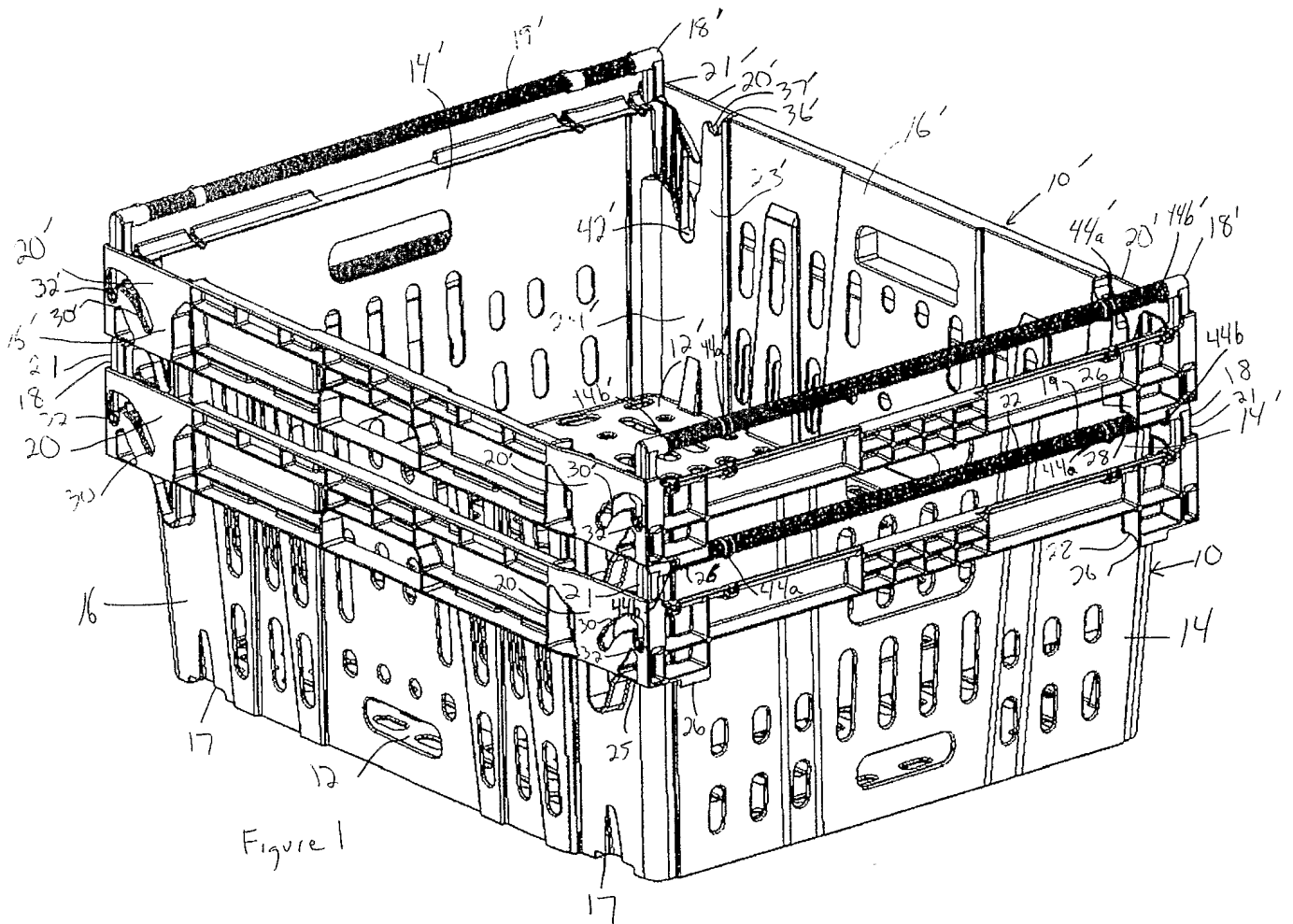
30. The container of claim 28 wherein the at least one interlocking member includes a first pair of axially-spaced interlocking members.

31. The container of claim 30 wherein the at least one radial interlocking member further includes a second pair of axially-spaced radial projections.

32. The container of claim 27 wherein the at least one interlocking member is vertically aligned with an outer edge of the floor, such that the at least one interlocking member would be adjacent a floor of a like container stacked thereon.

10

33. The container of claim 27 wherein the floor includes a bottom surface having at least one recess for receiving the at least one interlocking member of a like container stacked therebelow.



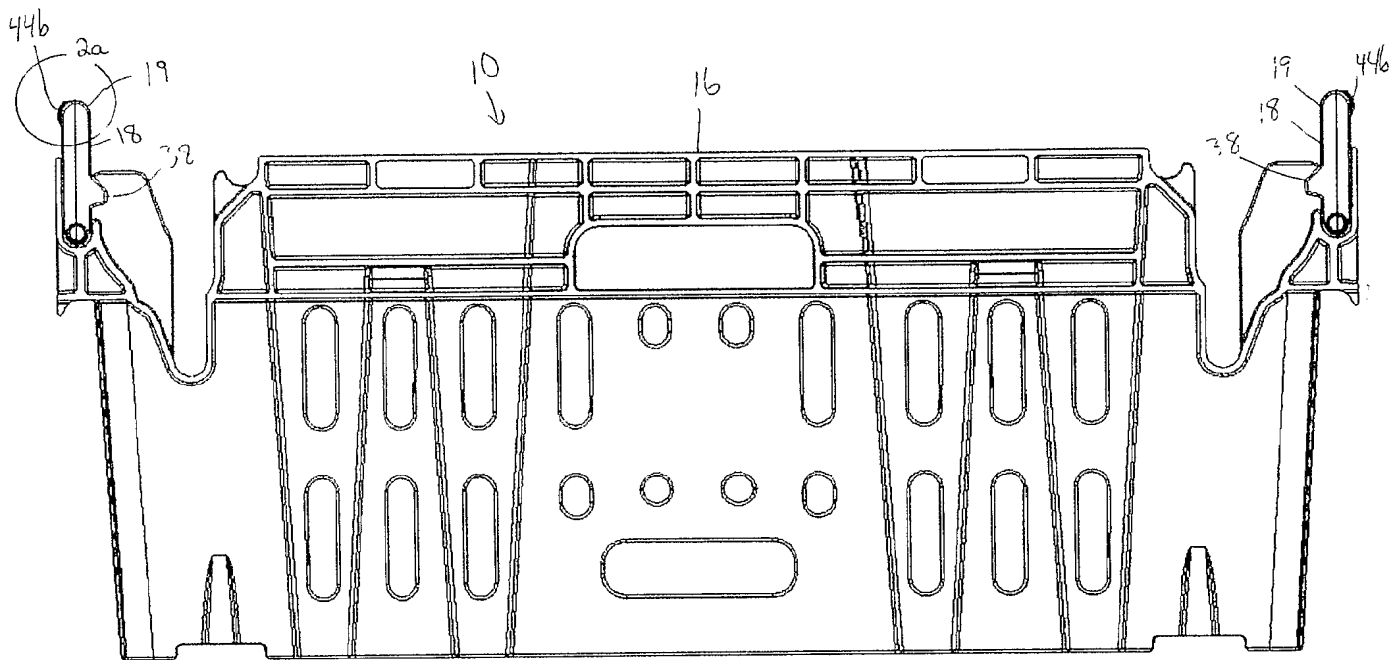


Figure 2

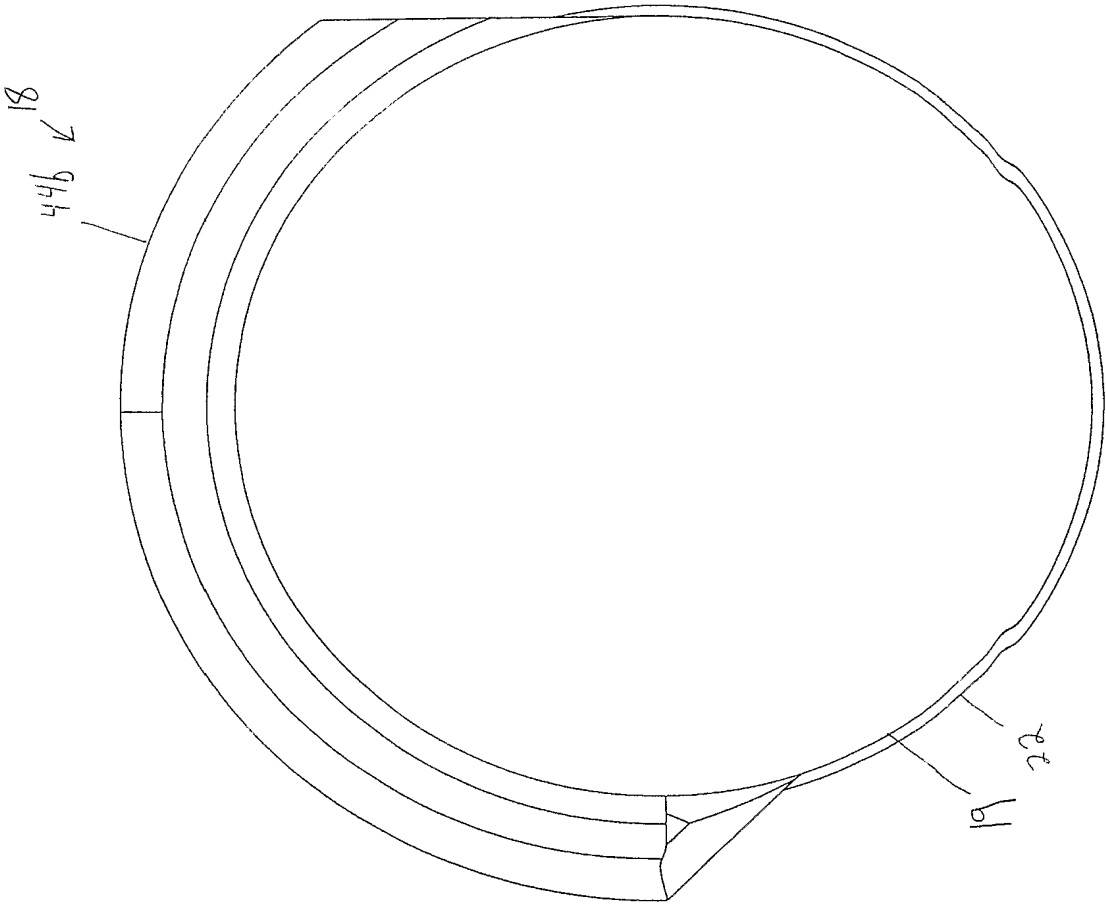


Figure 2a



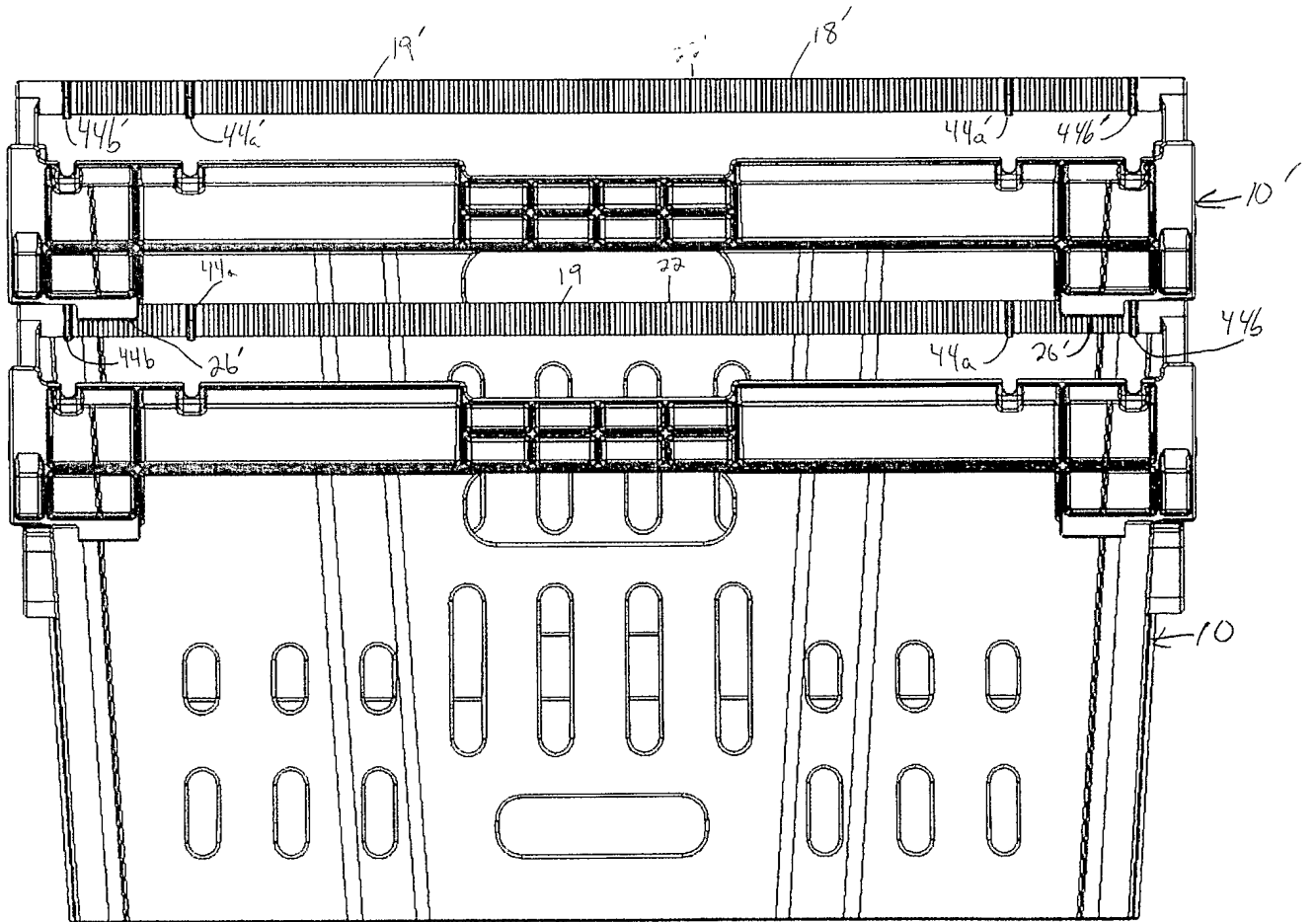


Figure 3

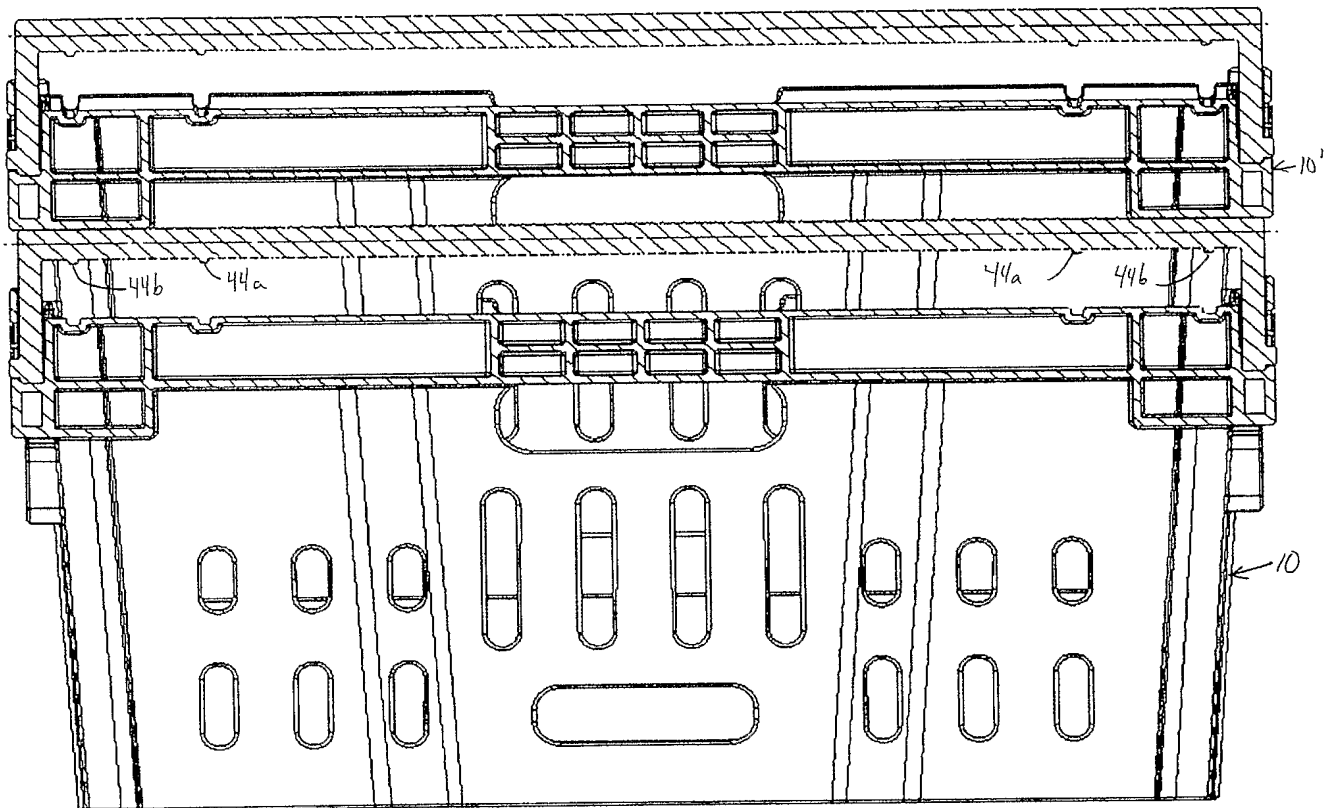


Figure 4

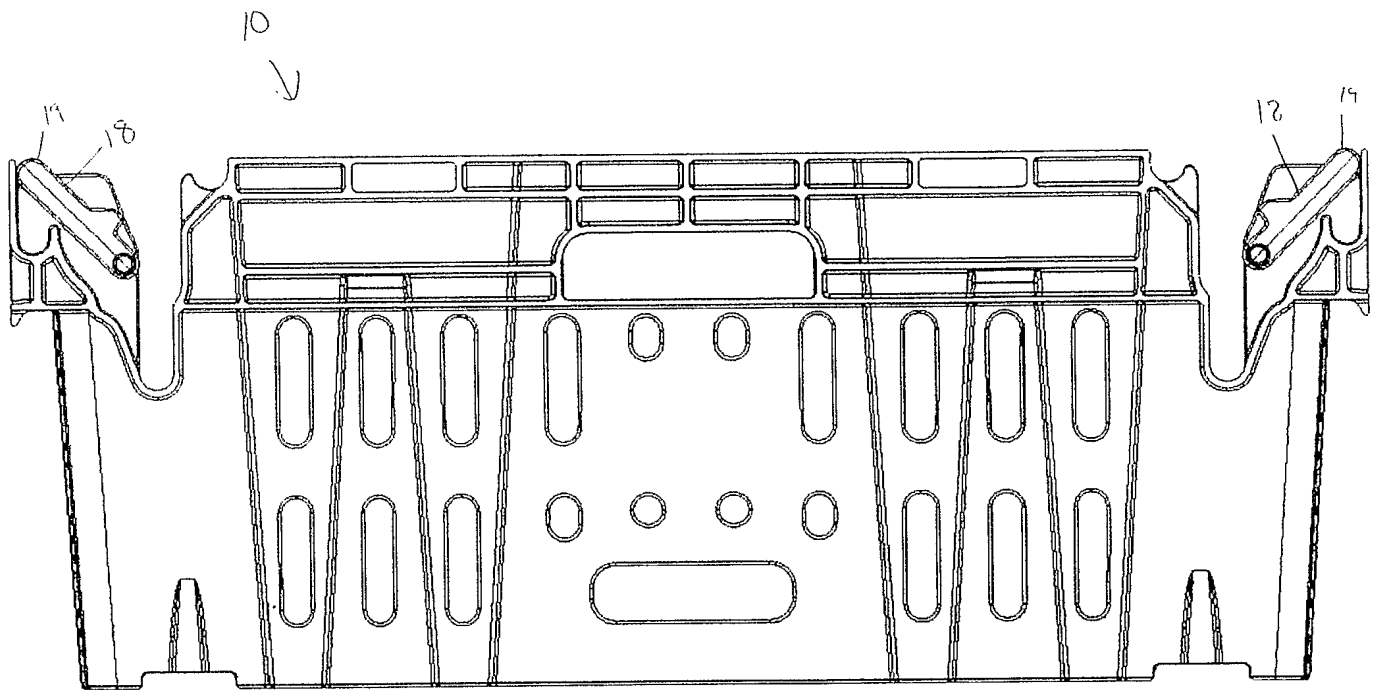


Figure 5

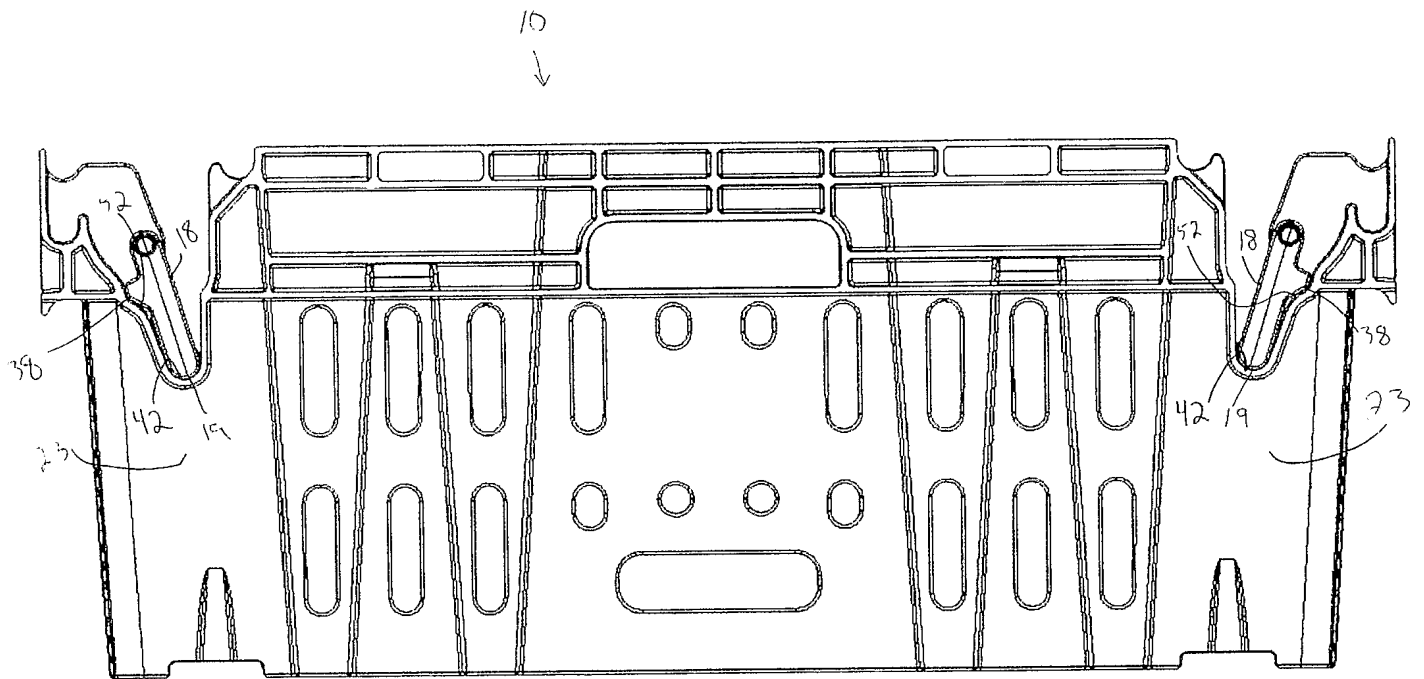
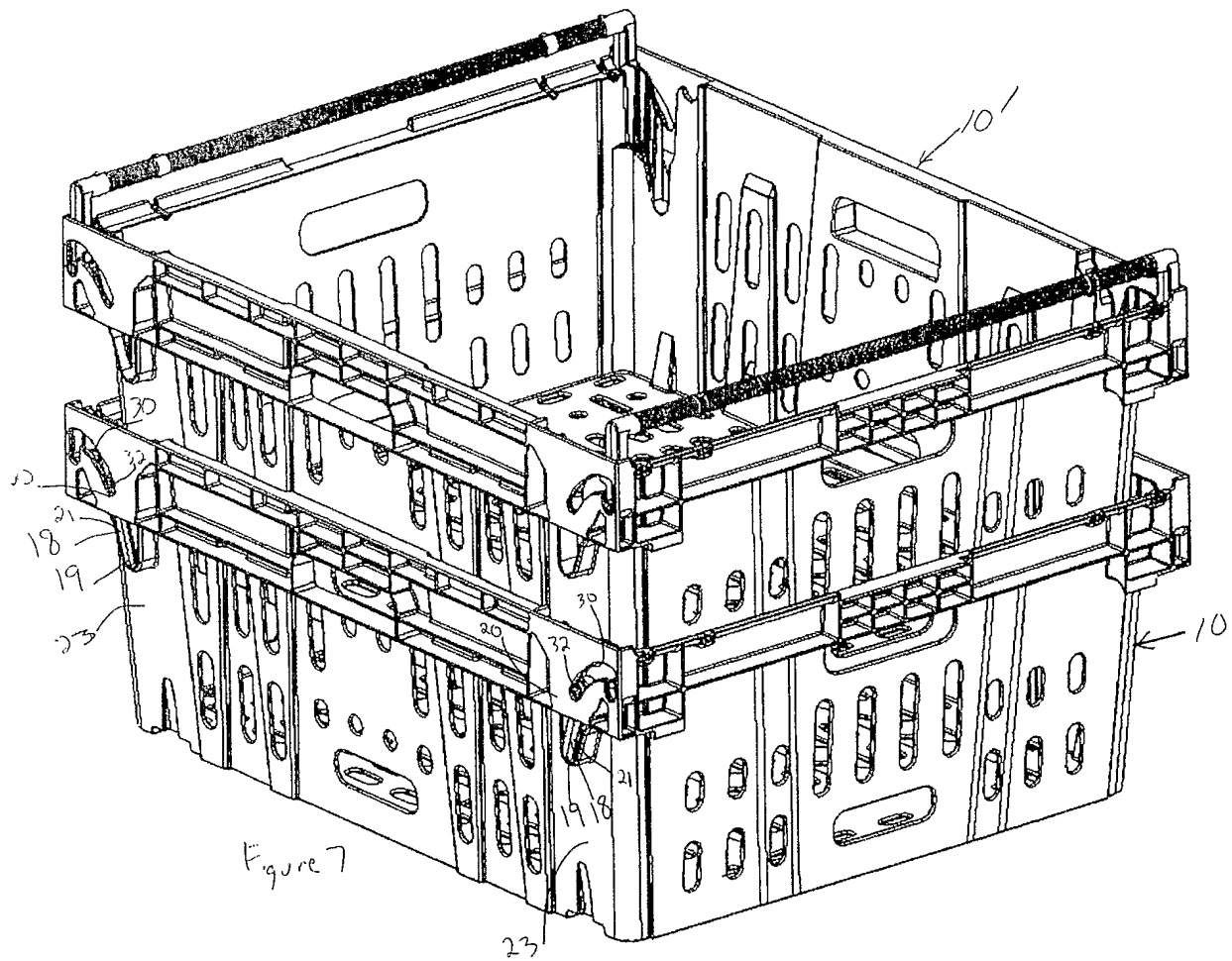


Figure 6



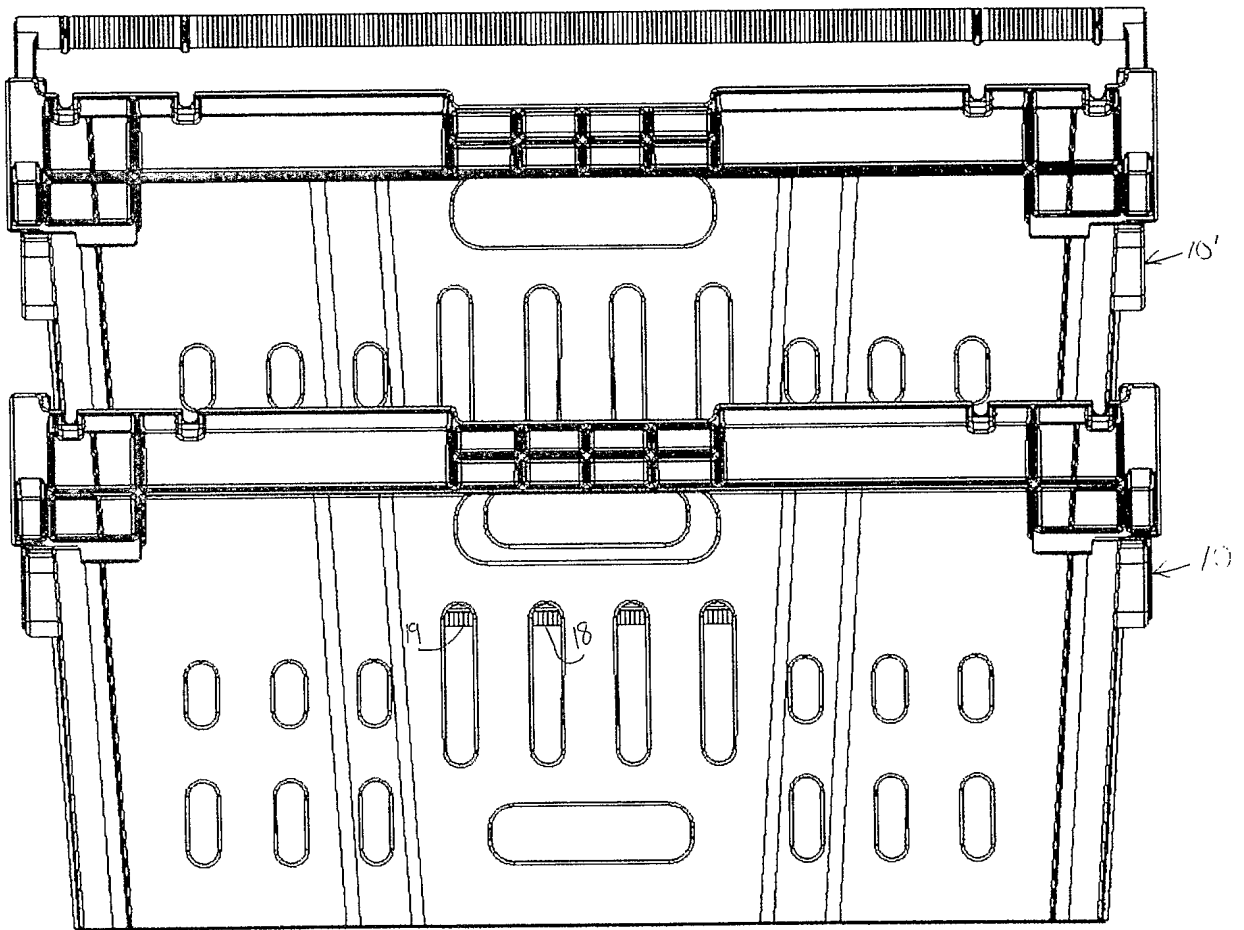


Figure 8

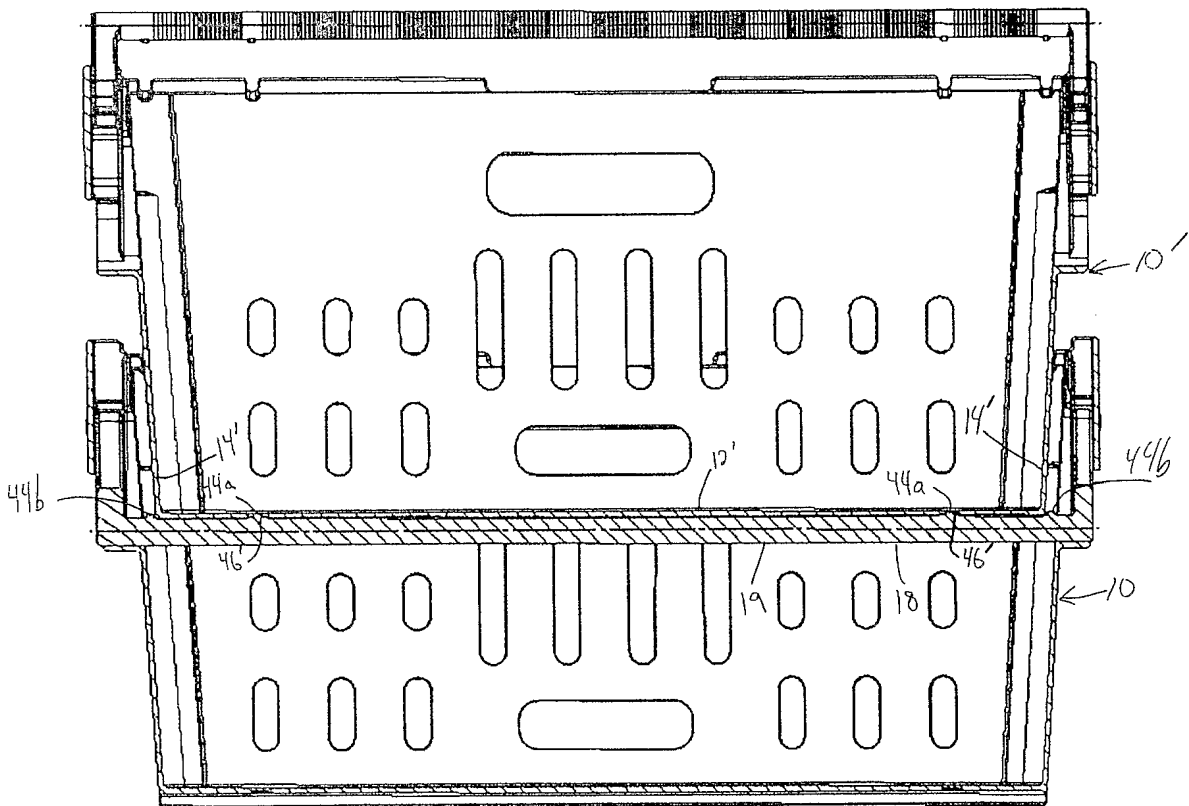


Figure 9

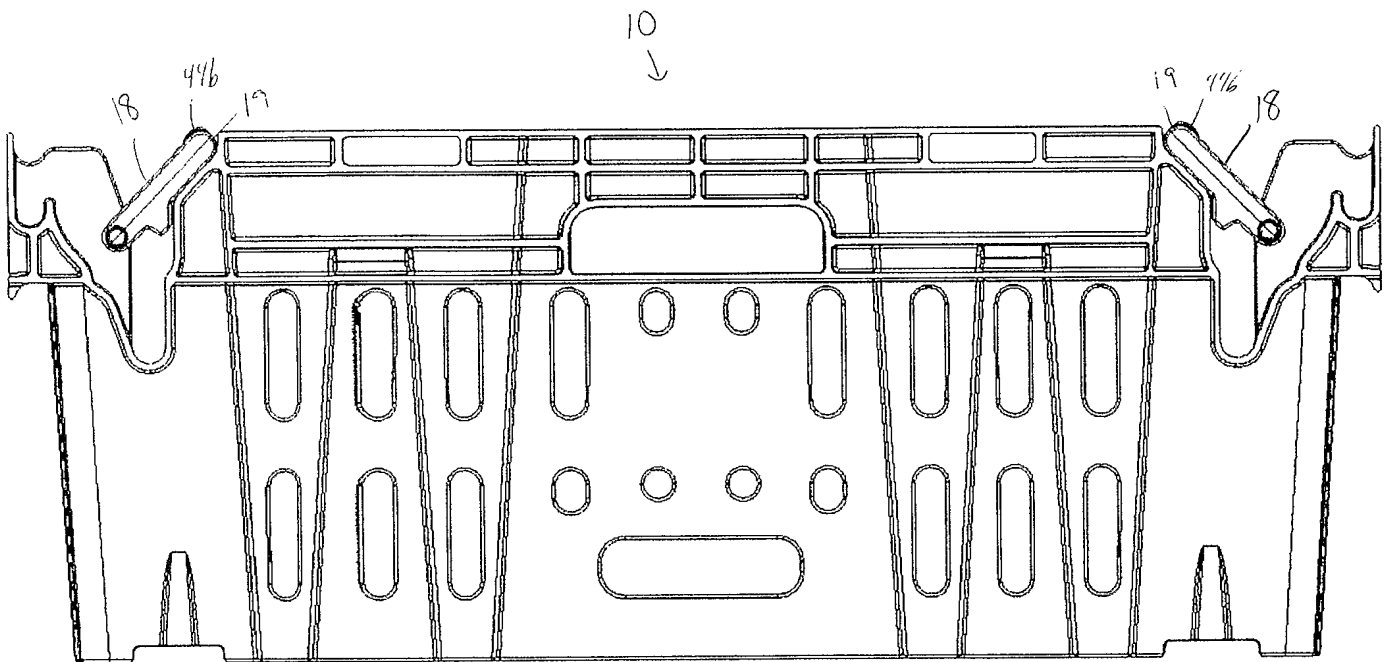


Figure 10



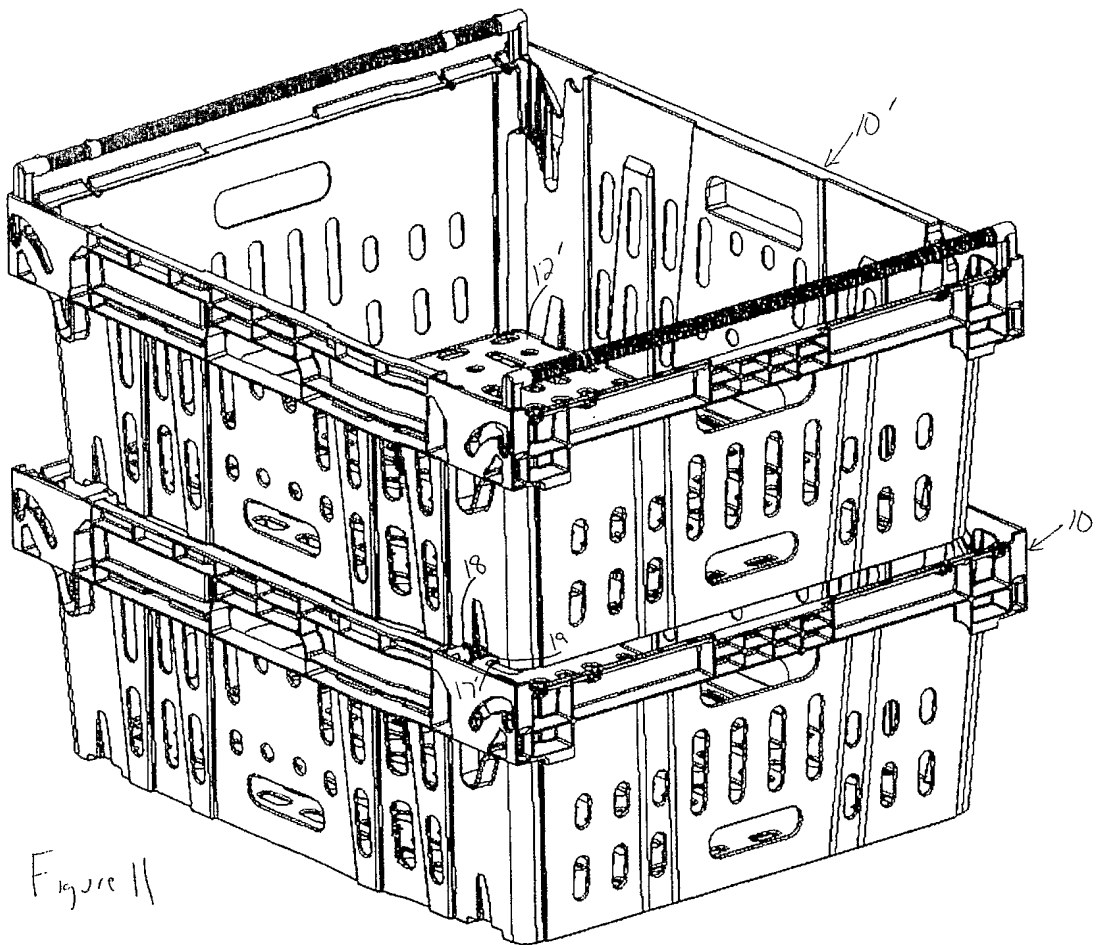


Figure 11

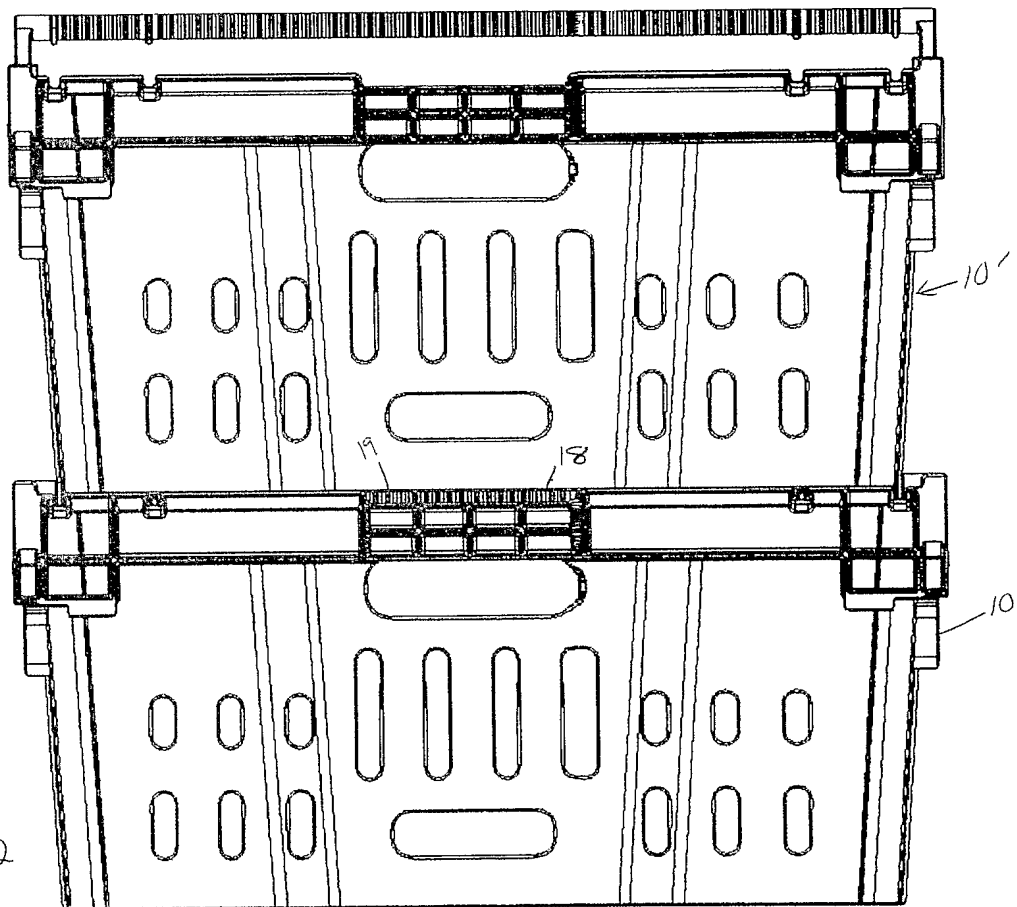
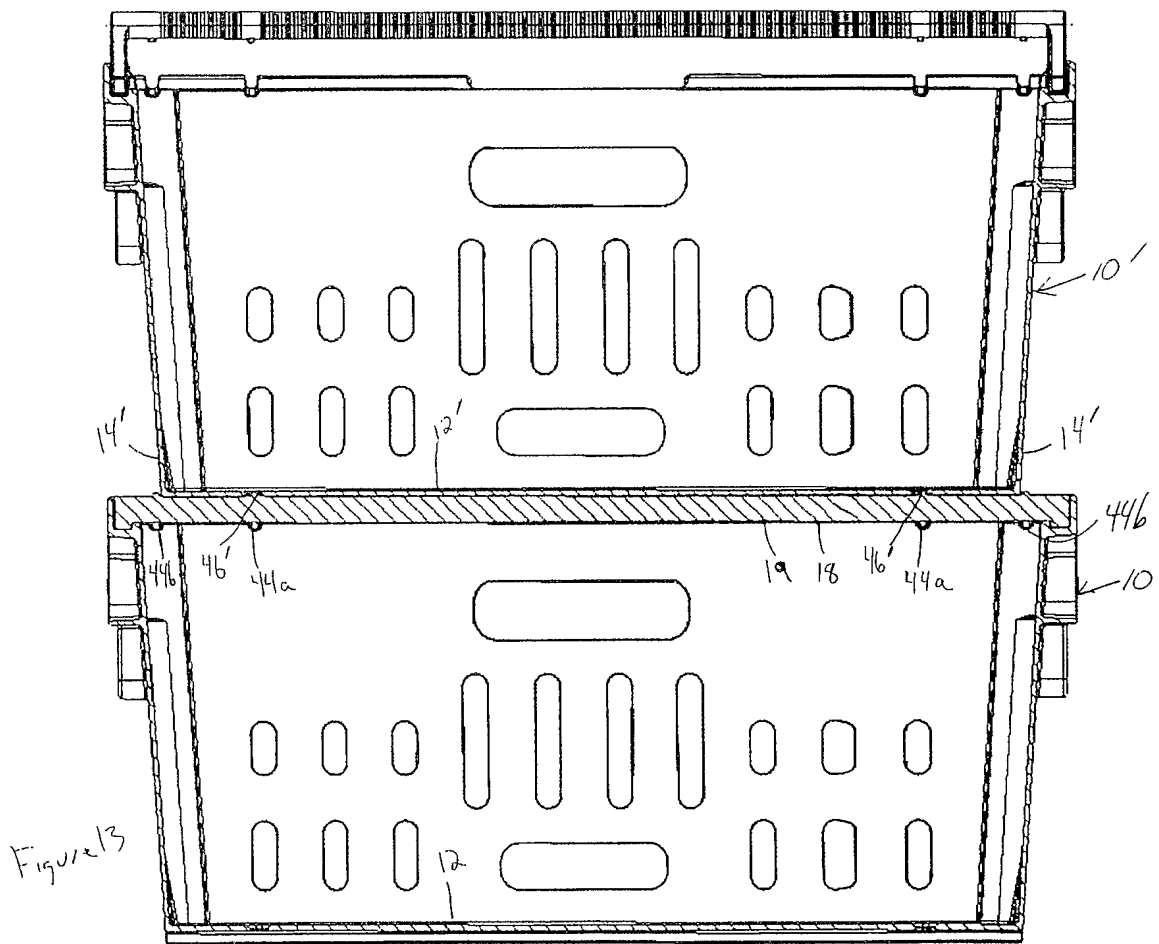
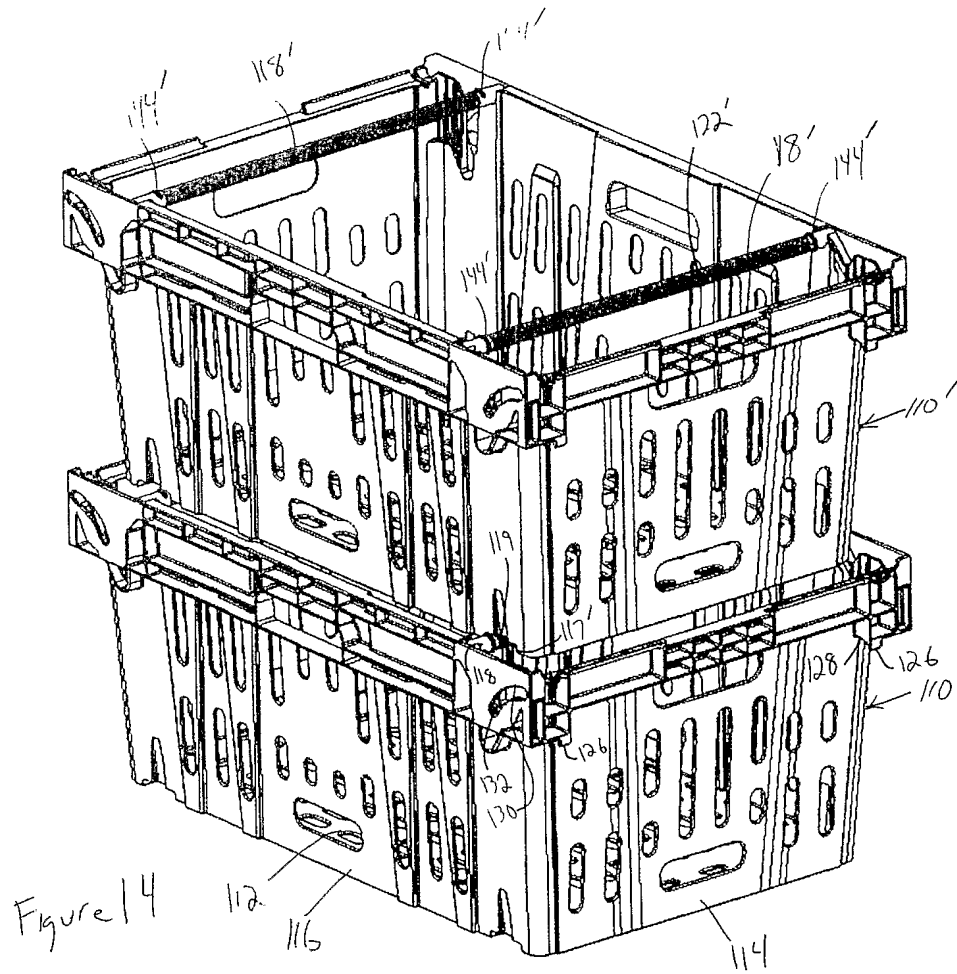


Figure 12





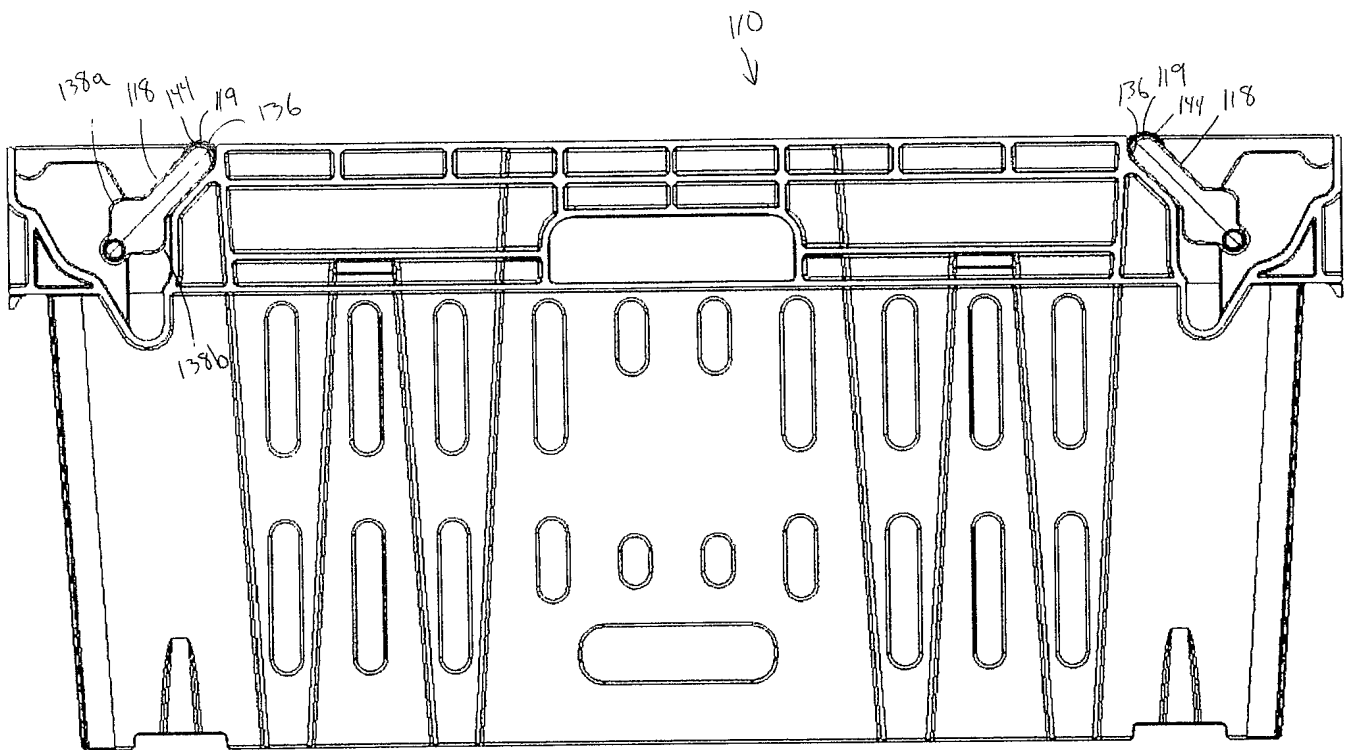


Figure 15

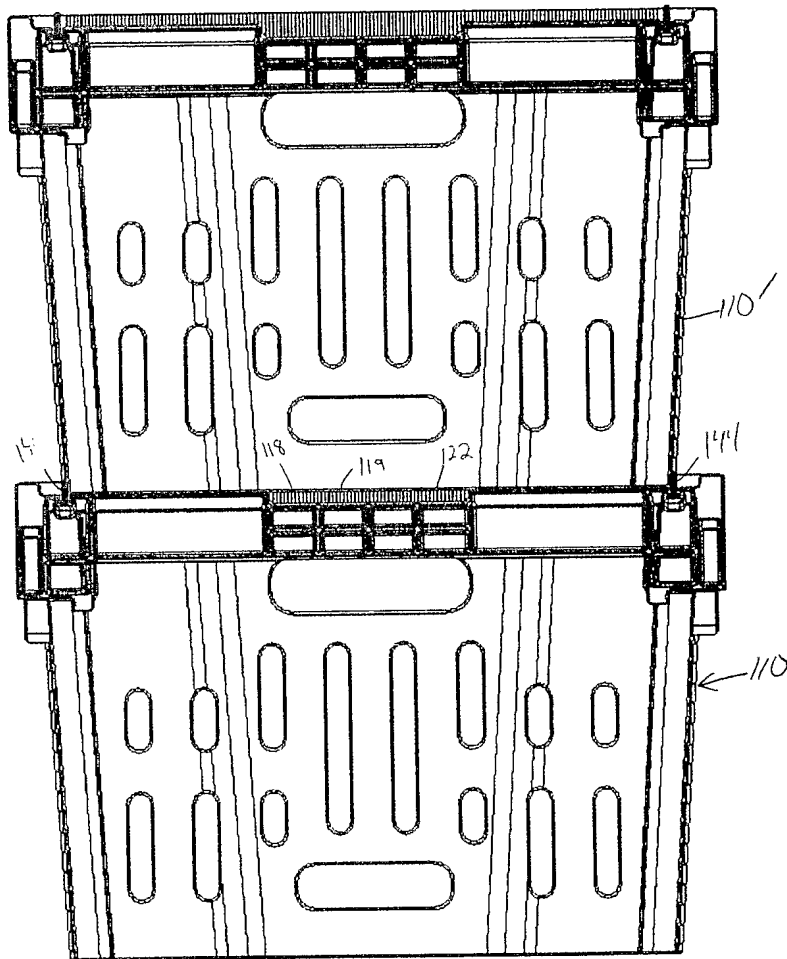
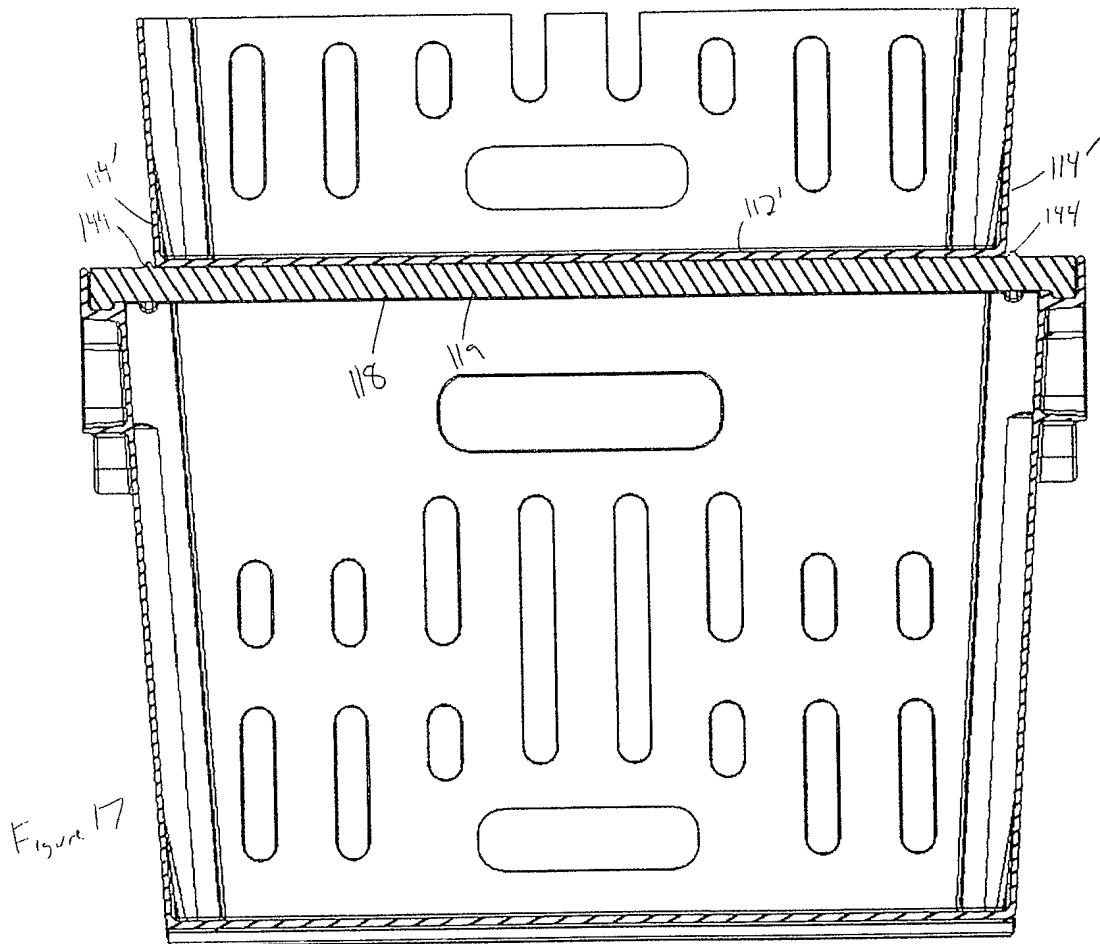


Figure 16



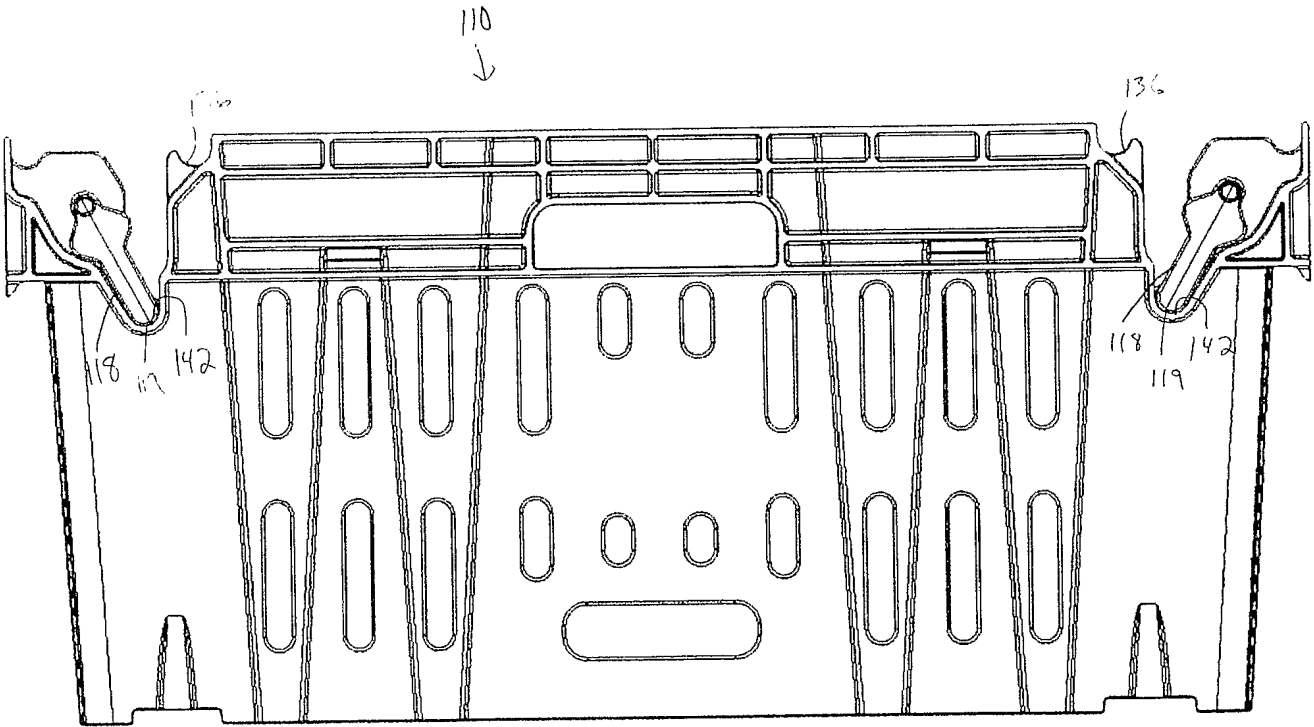


Figure 18



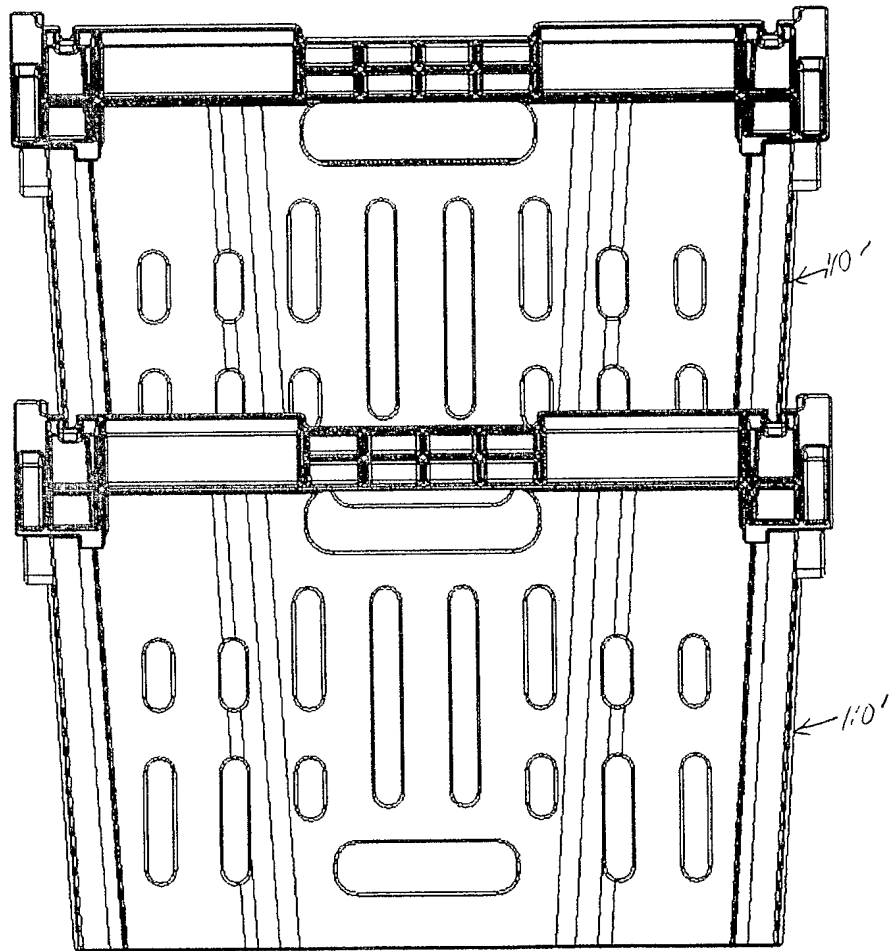


Figure 19

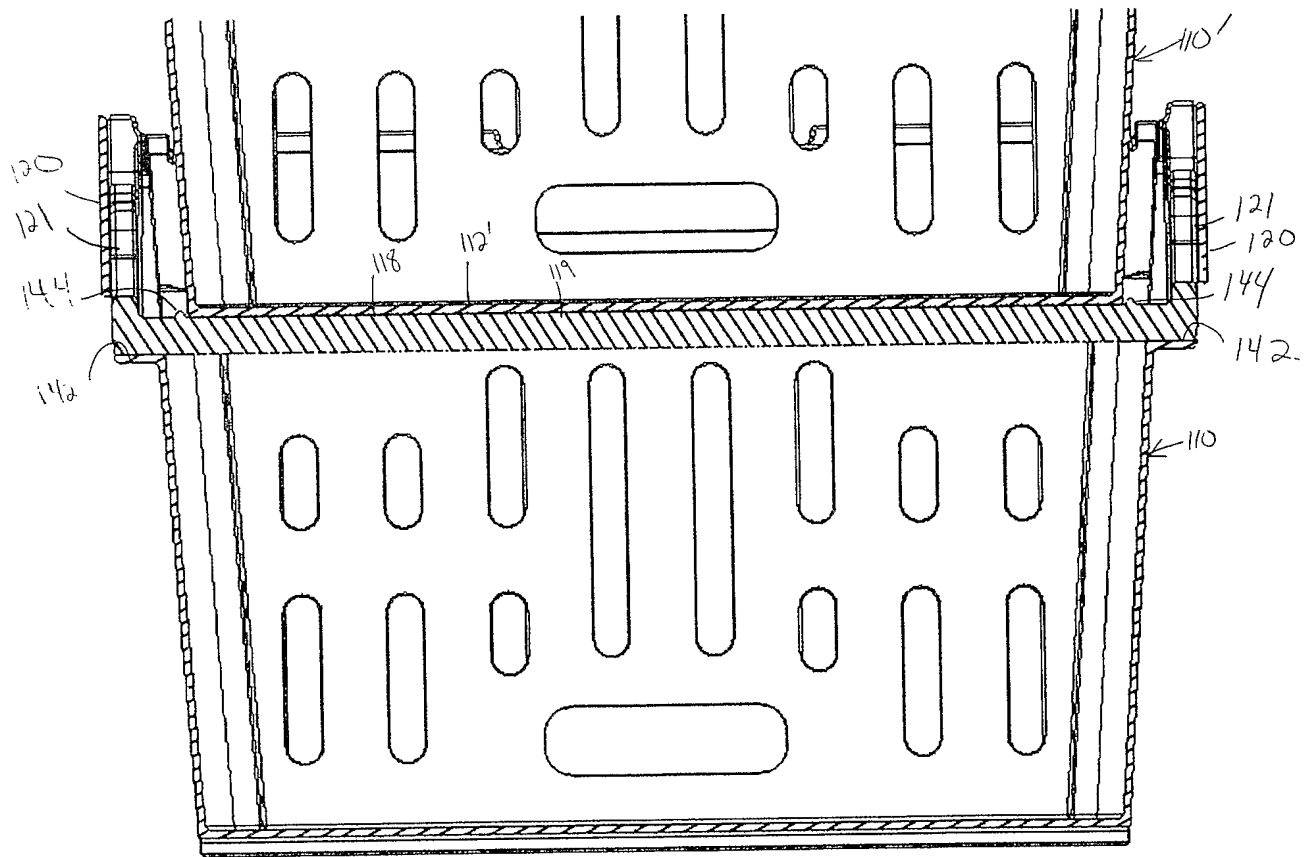


Figure 20

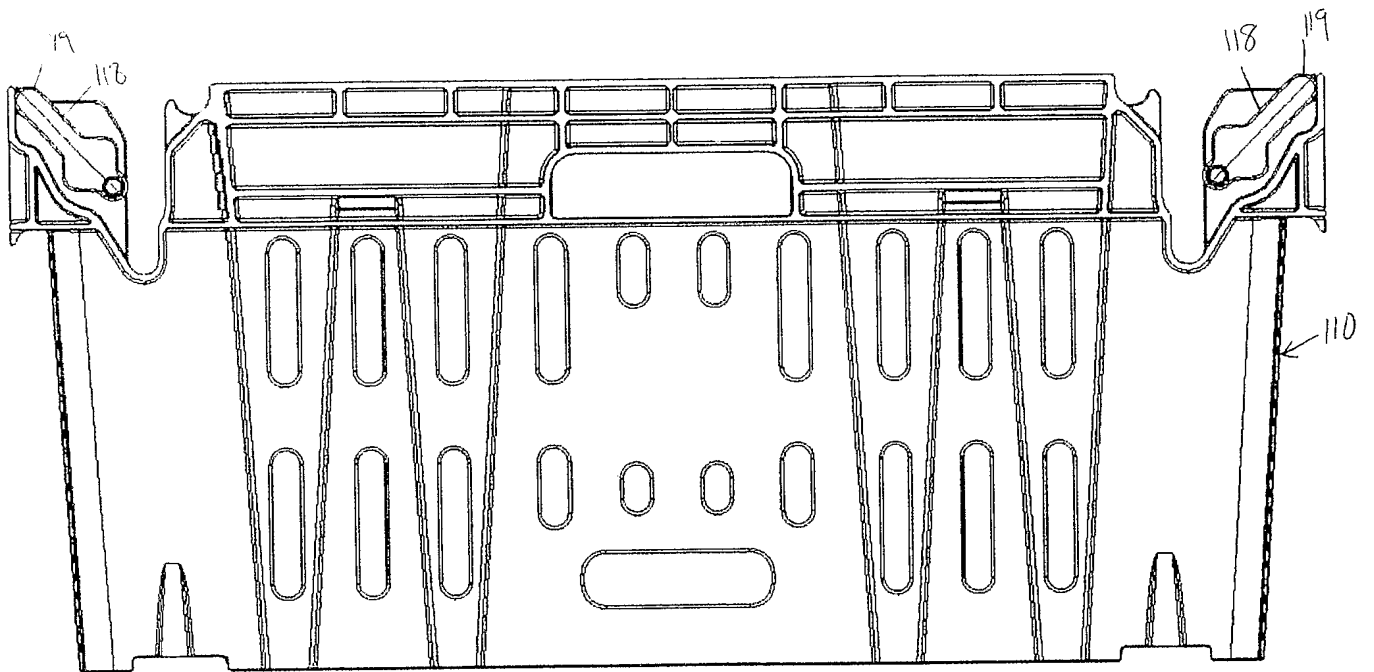


Figure 21

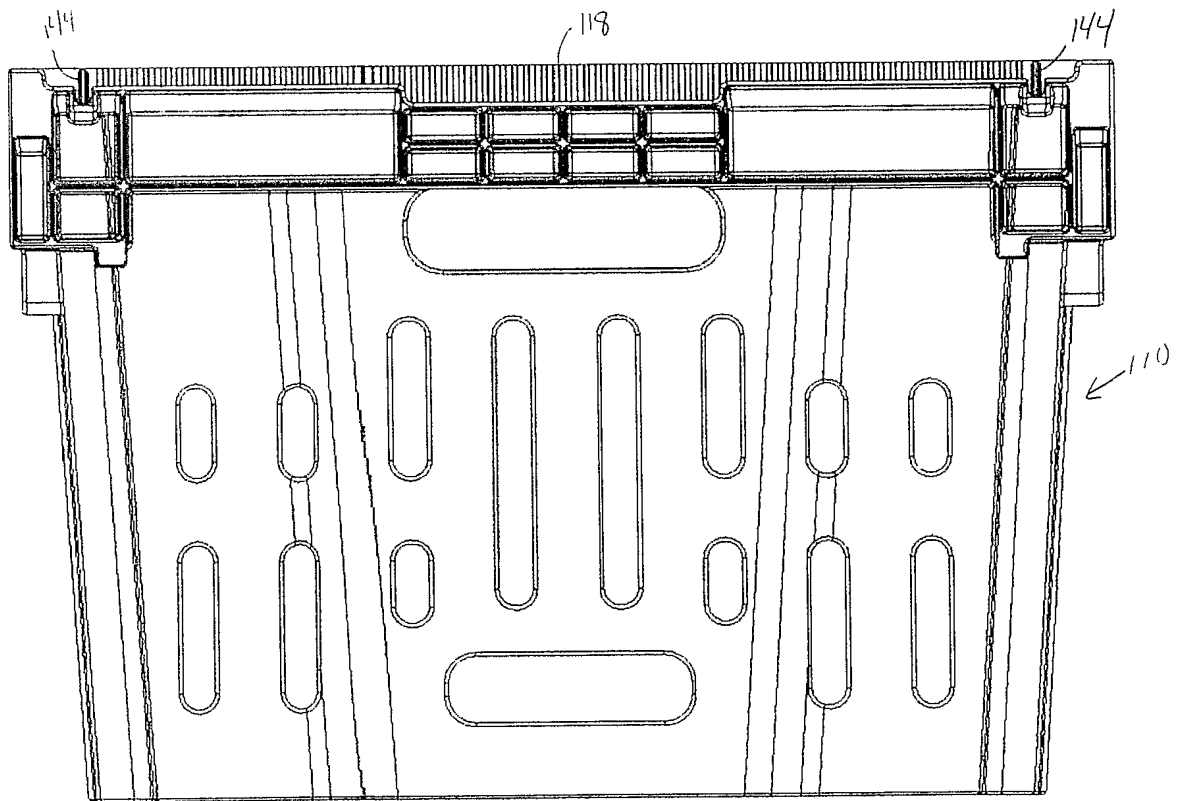


Figure 22

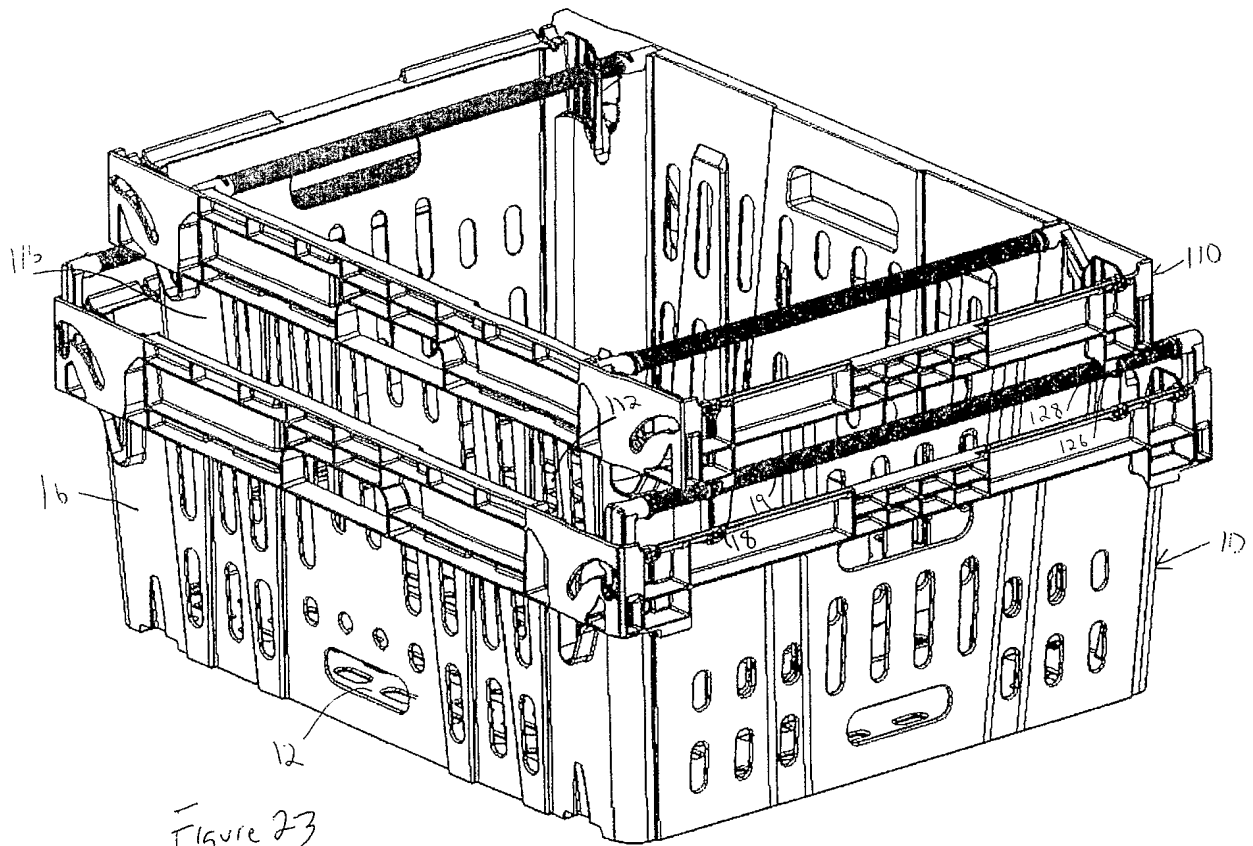


Figure 23

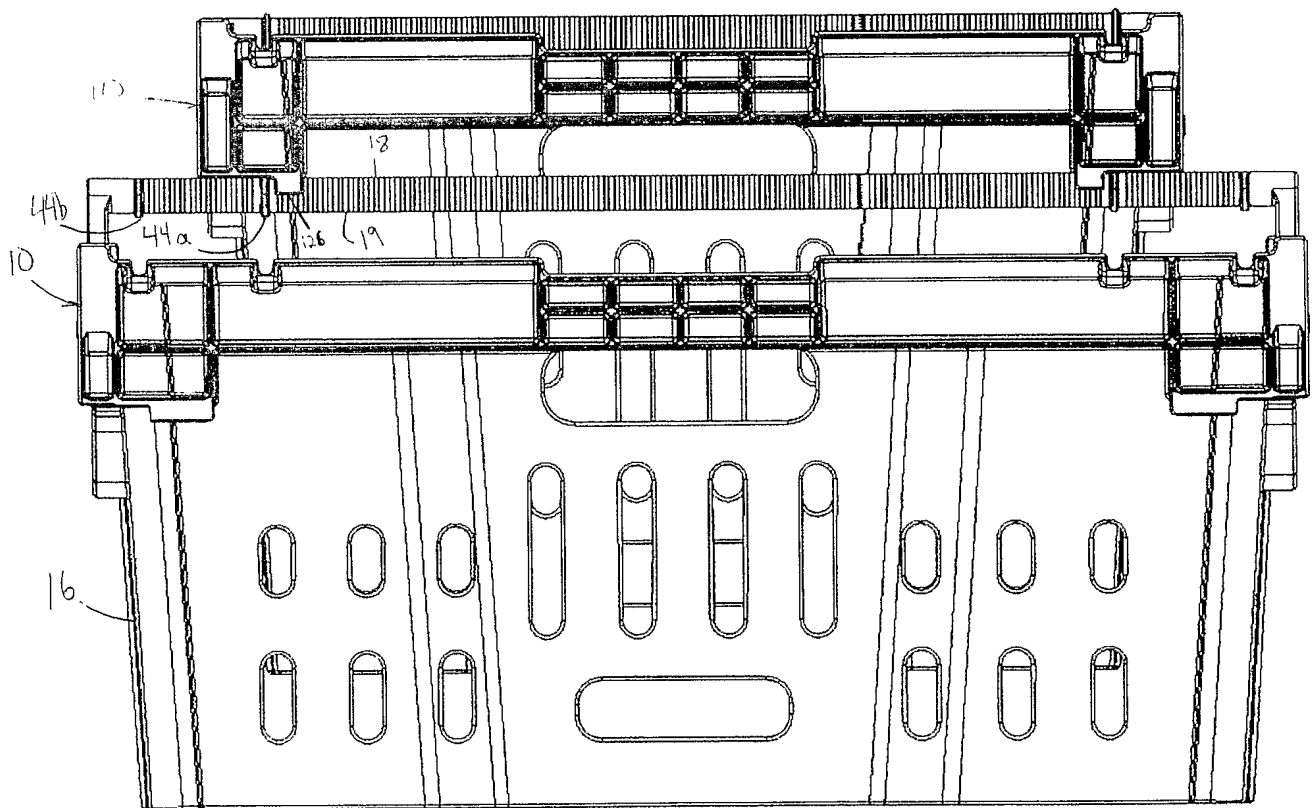


Figure 24

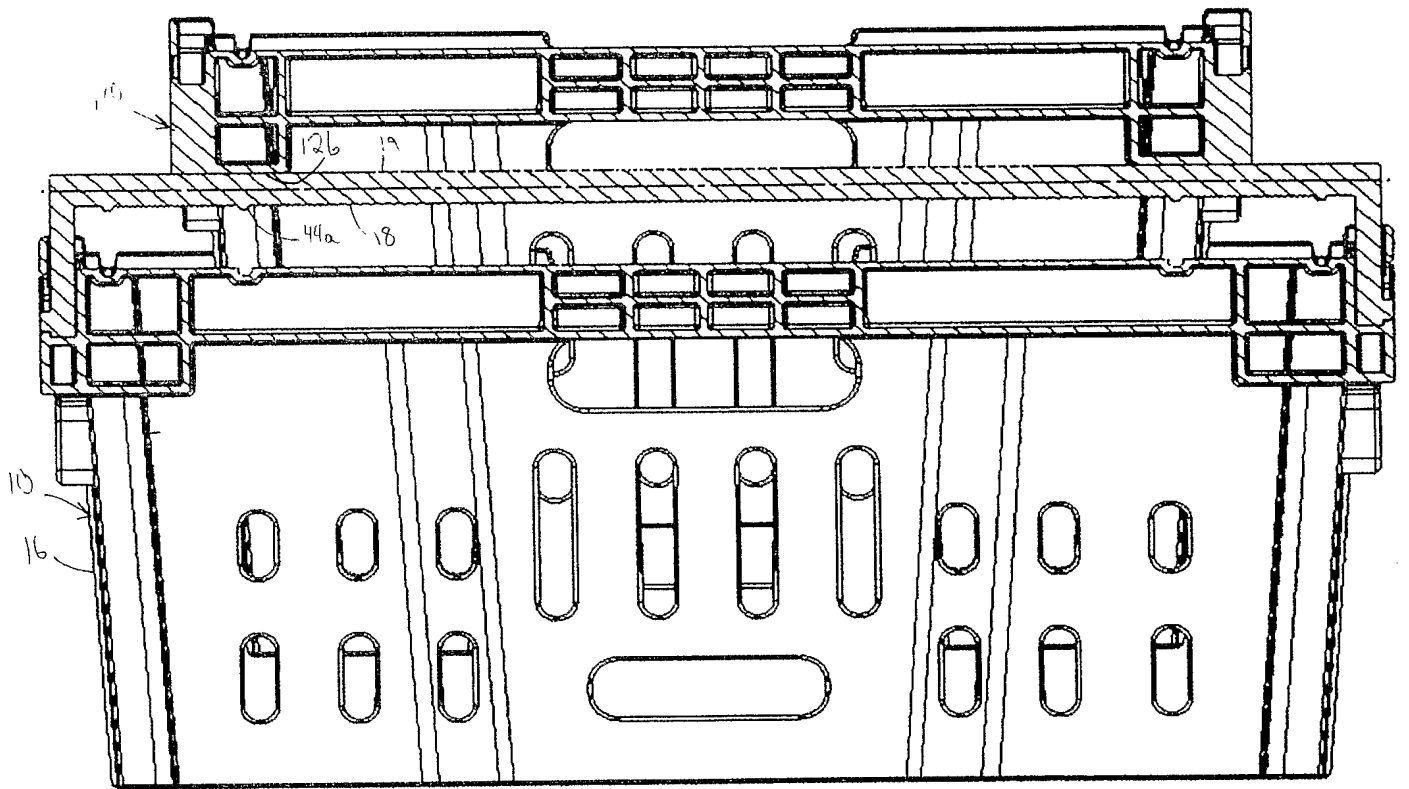
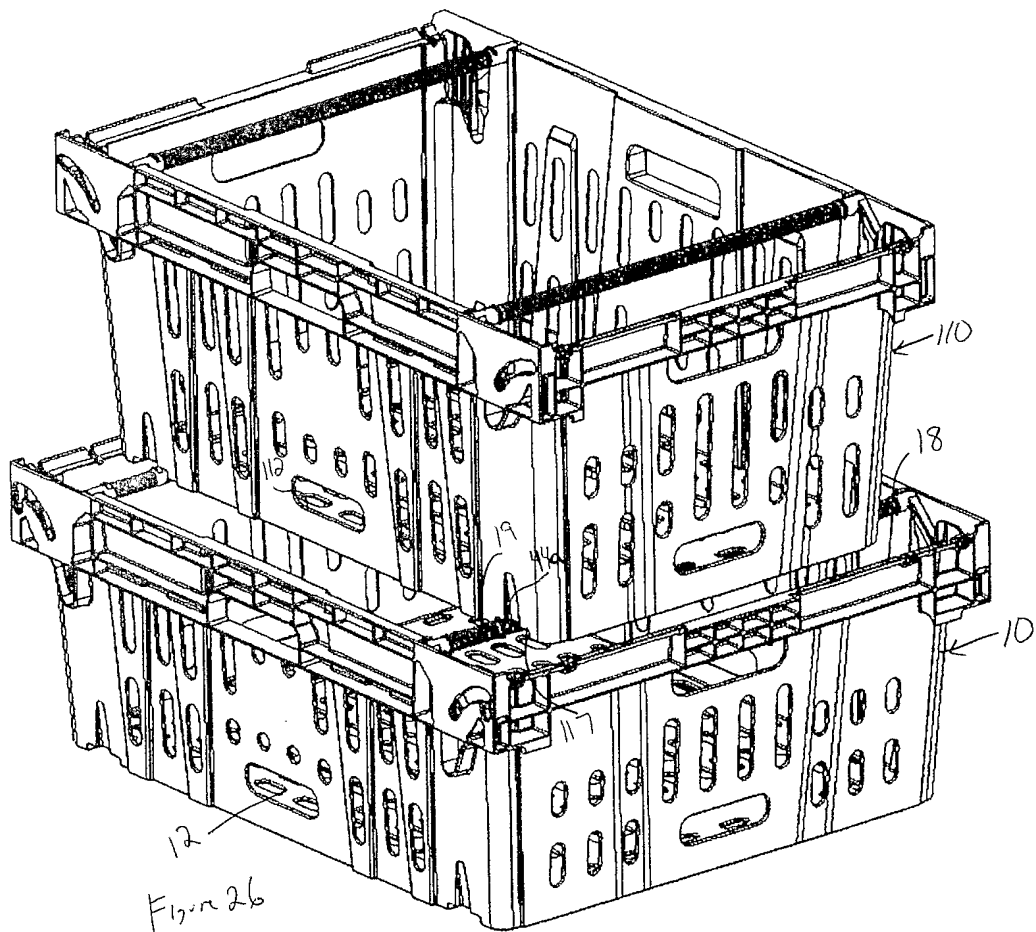


Figure 25





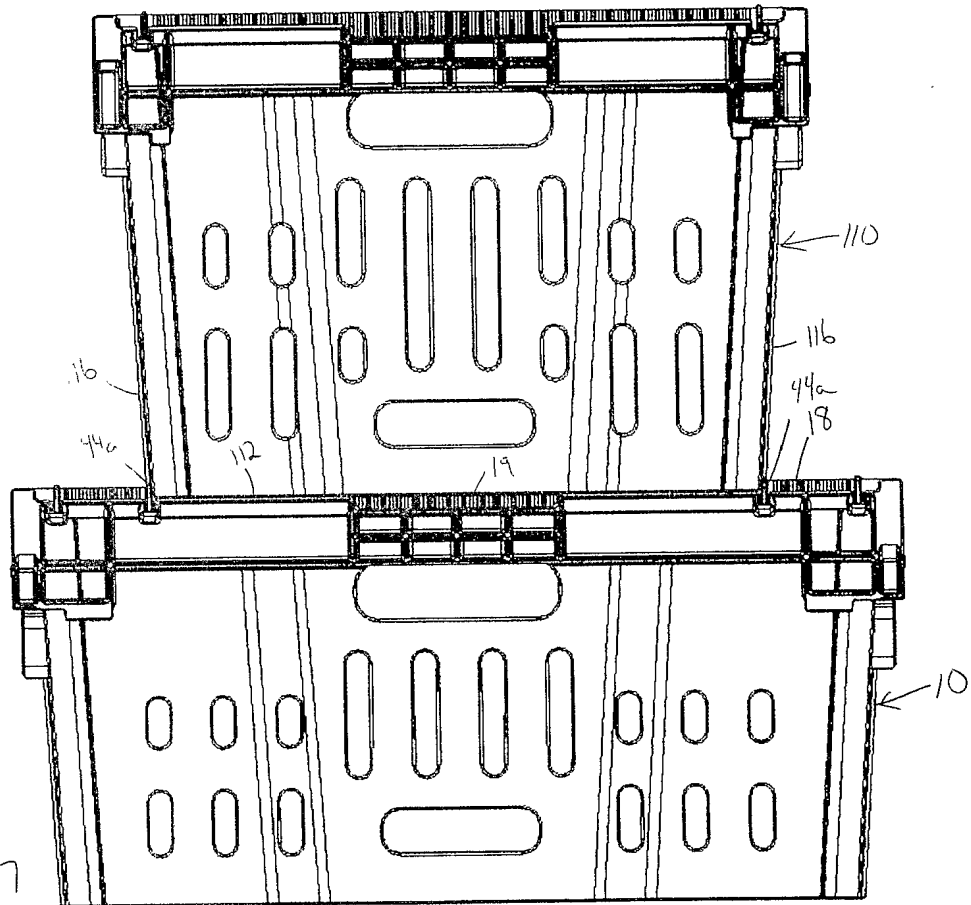


Figure 27

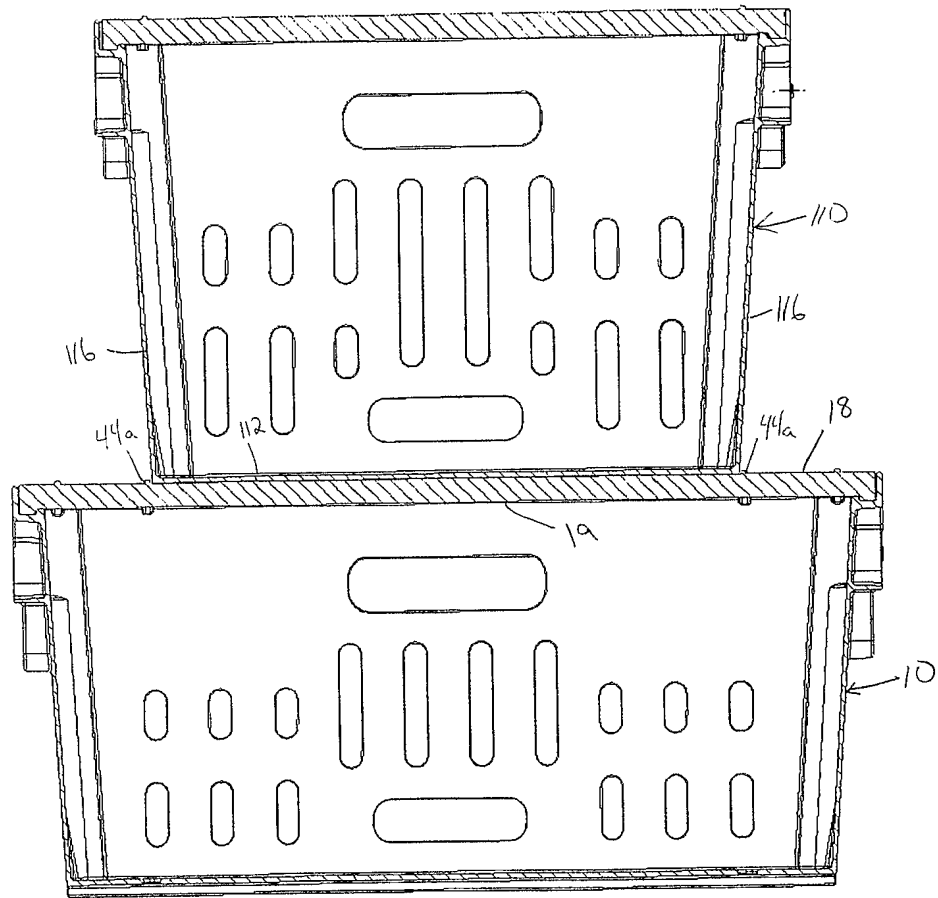


Figure 28

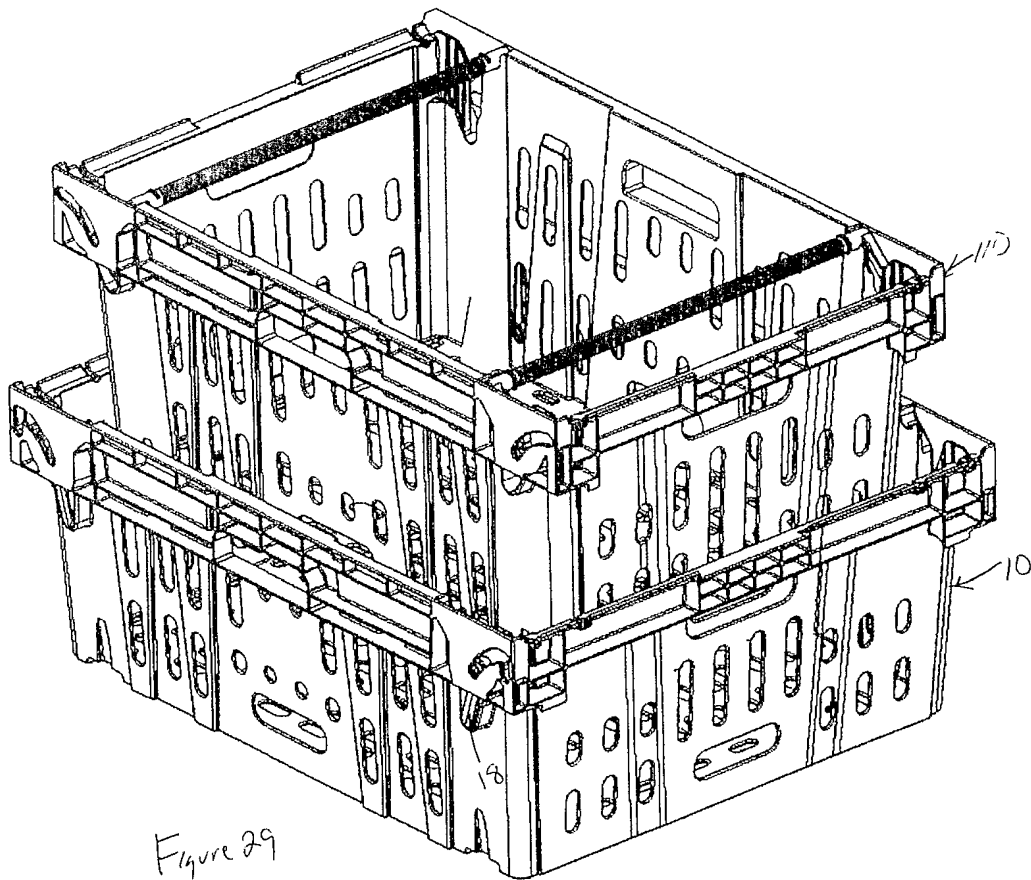
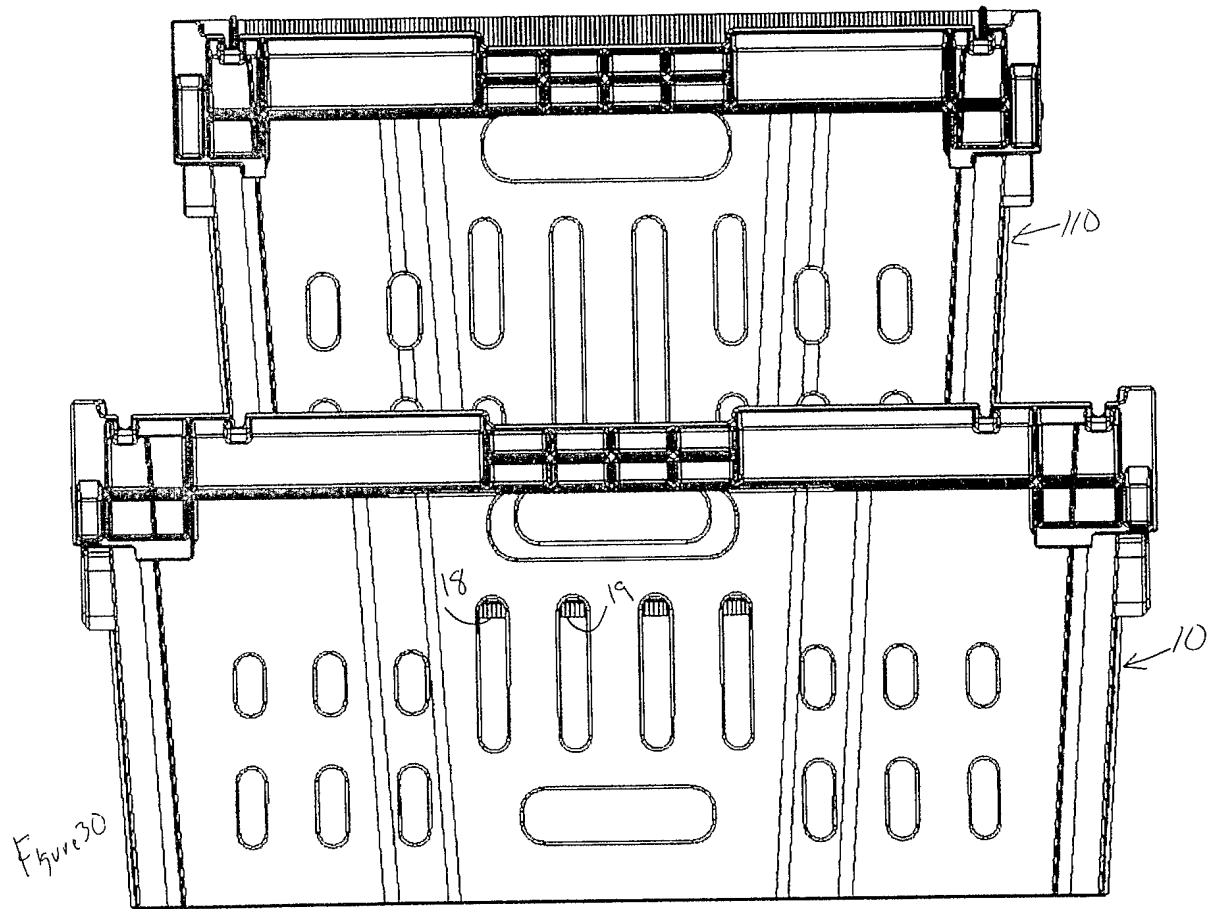
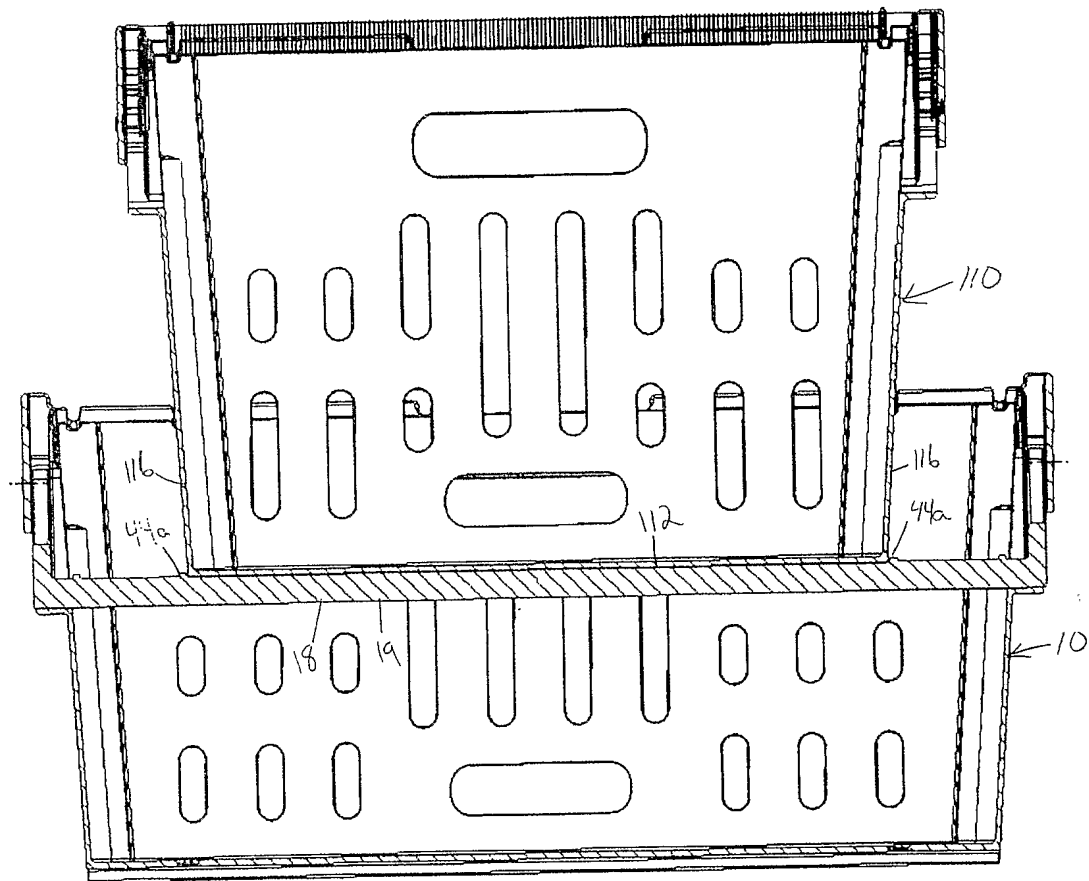


Figure 29





# INTERNATIONAL SEARCH REPORT

national application No

PCT/US2005/034355

## A. CLASSIFICATION OF SUBJECT MATTER

B65D21/06 B65D21/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 059 114 A (LOFTUS ET AL) 9 May 2000 (2000-05-09) column 2 - column 3; figures 2-6 -----	1-18, 23-33
X	EP 1 170 223 A (LIN PAC MOULDINGS LIMITED) 9 January 2002 (2002-01-09) figure 1 -----	1
A	EP 0 557 002 A (MCKEHNIE UK LIMITED) 25 August 1993 (1993-08-25) column 4, line 39 - column 5, line 35; figures 1-9 -----	1-33
A	US 2002/117420 A1 (MCDADE CLINTON) 29 August 2002 (2002-08-29) figures 1-5 -----	1-33



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\* & \* document member of the same patent family

Date of the actual completion of the international search

20 January 2006

Date of mailing of the international search report

13/02/2006

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Bevilacqua, V

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2005/034355

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6059114	A	09-05-2000	AT 208323 T	15-11-2001
			AT 208324 T	15-11-2001
			AU 715242 B2	20-01-2000
			AU 3353797 A	02-02-1998
			AU 3353897 A	02-02-1998
			CA 2259441 A1	15-01-1998
			CA 2259443 A1	15-01-1998
			DE 69708114 D1	13-12-2001
			DE 69708114 T2	04-07-2002
			DE 69708116 D1	13-12-2001
			DE 69708116 T2	04-07-2002
			DK 918693 T3	04-03-2002
			DK 918694 T3	04-03-2002
			EP 0918693 A1	02-06-1999
			EP 0918694 A1	02-06-1999
			ES 2135359 T1	01-11-1999
			ES 2135360 T1	01-11-1999
			WO 9801352 A1	15-01-1998
			WO 9801353 A1	15-01-1998
			GB 2331744 A	02-06-1999
			GB 2331983 A	09-06-1999
			NO 986151 A	02-03-1999
			NO 986152 A	03-03-1999
			NZ 333428 A	29-09-2000
			NZ 333429 A	27-10-2000
			US 6089373 A	18-07-2000
EP 1170223	A	09-01-2002	GB 2362378 A	21-11-2001
EP 0557002	A	25-08-1993	AT 157615 T	15-09-1997
			AT 216676 T	15-05-2002
			CA 2089521 A1	16-08-1993
			DE 69313482 D1	09-10-1997
			DE 69313482 T2	08-01-1998
			DE 69331848 D1	29-05-2002
			DE 69331848 T2	28-11-2002
			DK 557002 T3	22-12-1997
			ES 2106275 T3	01-11-1997
			ES 2176400 T3	01-12-2002
			FI 930652 A	16-08-1993
			GR 3025345 T3	27-02-1998
			NO 930475 A	16-08-1993
			NO 995478 A	16-08-1993
			US 5609254 A	11-03-1997
US 2002117420	A1	29-08-2002	NONE	